



Rock Products

DEVOTED TO THE PRODUCTION
AND SALE OF ROCK AND CLAY PRODUCTS.

Vol. III.

LOUISVILLE, KY., MARCH, 1905.

No. 12.

SEND FOR BOOKLET



THE SIDE WALK BRAND

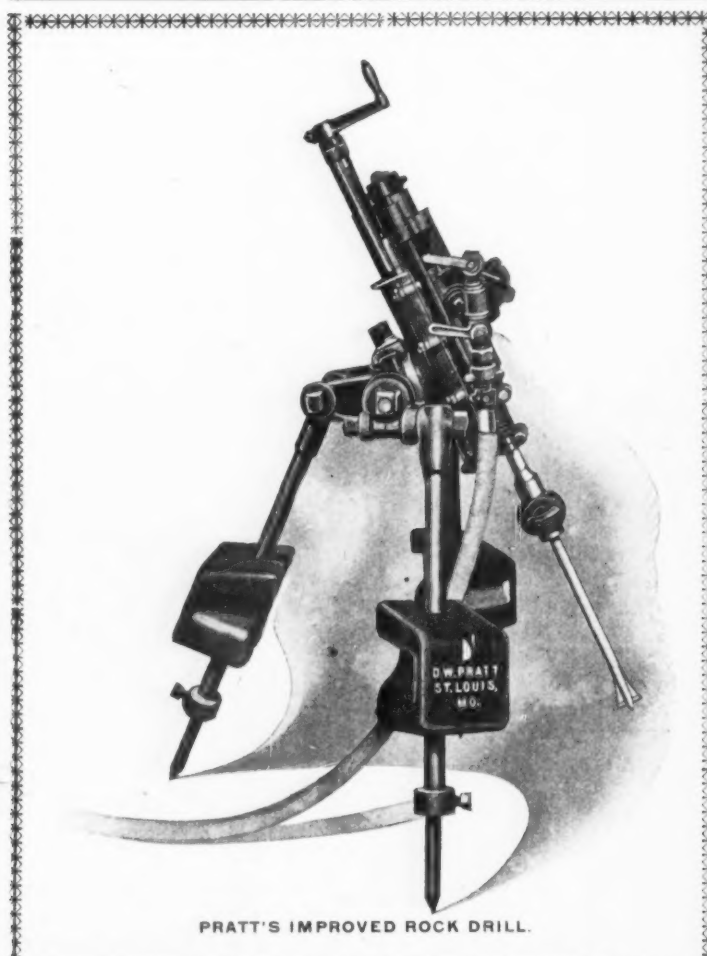
MARQUETTE PORTLAND CEMENT

Gives Absolute Satisfaction for All Kinds of Concrete Work.

MARQUETTE CEMENT MANUFACTURING CO.,

MILLS: LA SALLE, ILL.

SALES DEPARTMENT: MARQUETTE BLDG., CHICAGO.



D. W. Pratt

Machinery Company,

No. 614 North Third Street,

ST. LOUIS, MO.

DESCRIPTION OF ROCK DRILL.

THE VALVE, which is the most important part of a rock drill, is of the Corliss or Rotary design and retains a perfectly steam or air-tight seat under all conditions.

Its movement is ABSOLUTELY and PERMANENTLY POSITIVE under any pressure. IT WILL START AUTOMATICALLY AT ANY PART OF THE STROKE. It will run at any speed desired, whether the VERY FASTEST or the VERY SLOWEST without danger of stopping. It will require LESS STEAM or AIR to do a given amount of work than any other drill, the valve being so constructed that the piston is POSITIVELY REVERSED.

It has a variable stroke and can be used at a stroke where others fail; this being one of the essential qualifications of a good drill, especially in starting a hole or working through seams. It strikes a very hard blow and its recovery is instantaneous. It has no peer as a mudder.

Our drills are made of the very best material the market affords, by skilled workmen, and with new and improved machinery, and particular care has been taken to make them the best on the market. All parts are interchangeable.

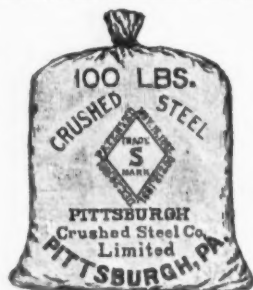
Complete plants of Machinery for Mines, Quarries and Contractors.

PITTSBURGH CRUSHED STEEL CO., Ltd.

PITTSBURGH, PA., U. S. A.

Patentees and Sole Manufacturers of

Diamond
Crushed
Steel



Diamond
Steel
Emery

Angular in shape, made from high-grade Crucible Steel. Tough and lasting. Saws, Rubs, Grinds, Polishes Granite, Stone, Marble, Brick, etc. Does it cheaper and faster than any other Abrasive. Write for prices and samples.

Sole Agents for Celebrated "Samson" German Chilled Shot. Samples and prices furnished on application. New England trade supplied by Harrison Supply Co., Boston, Mass.

There is a book that is not for sale, but may be rented a year for \$5.00, that tells about—

Granite Prices.

It is the official price list of the Barre Granite Manufacturers' Association, which gives price pointers for any and all kinds of Granite work. Address THE FRANCIS PUBLISHING CO., 431 West Main Street, Louisville, Ky

Tell 'em you saw it in ROCK PRODUCTS.

A. ANDERSON & SONS,

Quarriers and Manufacturers of

Barre Granite.

ALL WORK GUARANTEED FIRST-CLASS.

BARRE, VERMONT.

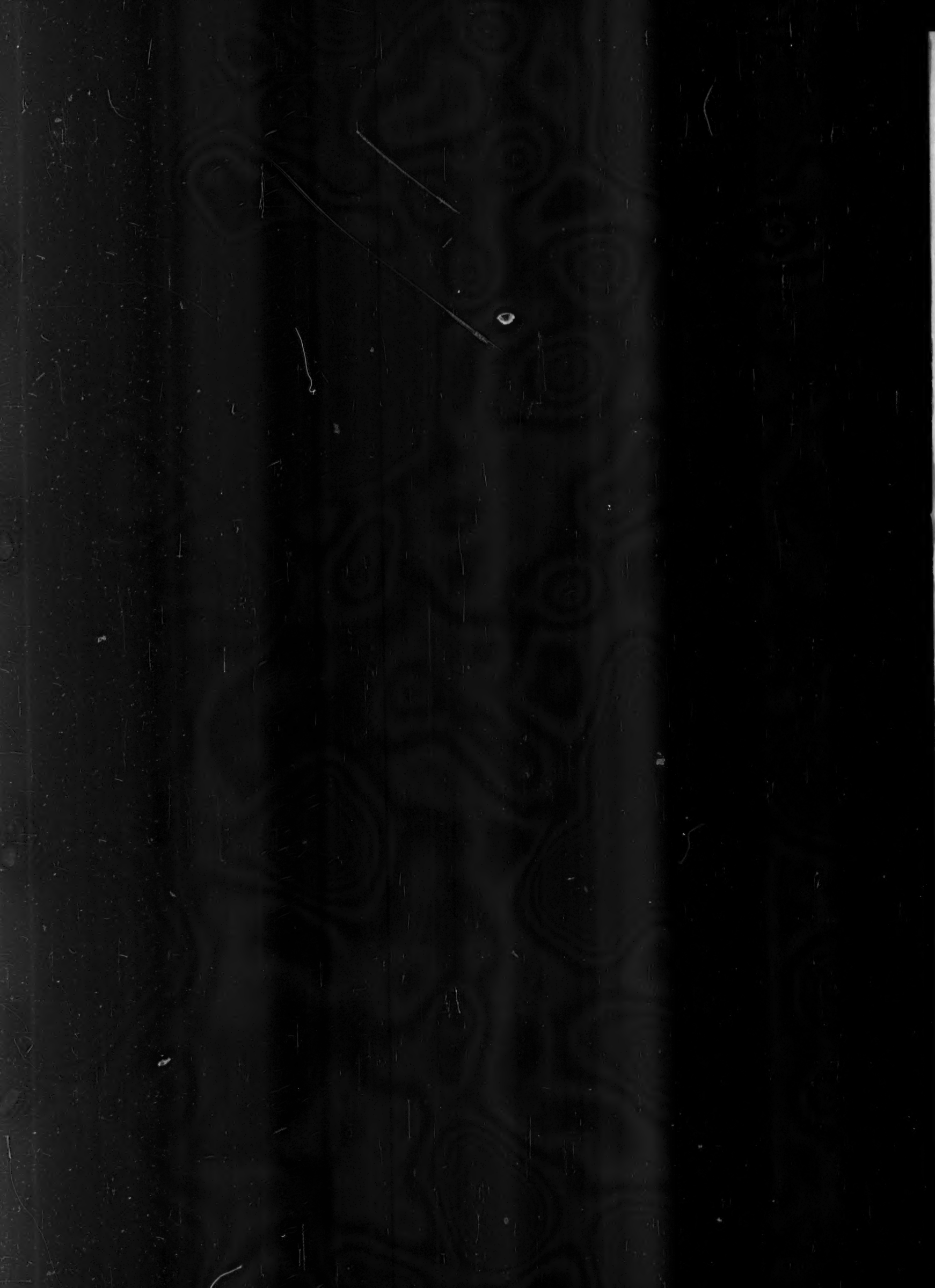
The Pirie Tool Sharpening Machine

is now on the Market.

Its capacity is 75 men, but it can be profitably used where 50 cutters are employed within a radius of one mile. For full particulars, write or inquire

PIRIE TOOL SHARPENING MACHINE CO.

MONTPELIER, VERMONT.



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No. 12.

California Sandstone.

San Francisco, whose total population, including all her suburban districts, is reaching well up toward the 500,000 mark, is very rapidly expanding. Not only is the city fast stretching out her borders, but is steadily improving within what were once her original limits. Old buildings are being demolished, and new and magnificent structures substituted.

During the past three years the building activities have been immense. Not less than two score business blocks have been erected whose total cost have ranged from one to three millions each. In addition to these more than one hundred buildings have been erected, the total cost of each varying from \$100,000.00 to \$500,000.00.

Granite, marble and sandstone have been most prominent factors in these building activities. Next to the native granite, California sandstone has been employed in building construction in San Francisco—as well as in the interior cities and towns.

There are a number of sandstone formations in California—for the building-stone resources of this state are exhaustless—but the most extensive deposits on the coast, are found in Contra Costa County, some fifteen miles northeast of San Francisco, across the Bay.

The great quarry lies only a short distance from the flourishing little city of Point Richmond, and very near the railroad village of Franklin. The deposits spread over several hundred acres as shown by prospecting, boring, etc., and are of unknown depth—literally a whole mountain of this splendid building material.

The stone deposits are exceptionally free from crevices, fissures, flaws, etc. Vast masses are perfectly solid. Huge blocks, of almost any desirable dimensions, may be attained—weighing hundreds of tons. In fact, even the most ponderous plant—engine, derricks, cranes, and other appliances, are utterly inadequate to handle the largest pieces that could be wedged out.

At the ancient and renowned ruins of Thebes, Baalbec and Karnack, in Egypt, colossal pieces—"timbers"—of stone were found 8 and 10 feet square and 80 feet in length. It is no exaggeration to state that such gigantic pieces of sandstone could be quarried at this great stone deposit near Franklin; but no modern appliance could handle such ponderous masses of stone—even if they could be utilized in any structure of the present day. How the Egyptians ever handled such enormous pieces of stone has always been a problem with engineers, and perhaps the mechanical mystery will never be solved.



QUARRYING CALIFORNIA SANDSTONE.

The Franklin Sandstone Quarry is owned and operated by the Wilson-Lyon Construction Co., whose head office is in San Francisco. Its executive officers are as follows: President, H. Wilson; vice president, J. A. Byrne; secretary, H. M. Owens; treasurer, Hugh Dimond; directors, J. H. Bacher, Robt. J. Britzman and Joseph Slye.

This contractor-corporation has almost unlimited resources, and one of the largest and most complete plants on the Pacific Coast. The output is enormous—though scarcely adequate to the demand.

At the quarry a large force of expert, experienced quarrymen are employed the year round. But little blasting is done, as it badly shatters the stone. Drilling and wedging are the methods generally employed. Hundreds of tons of stone in the rough are quarried each day.

A railroad spur extends from the quarry down to Point Richmond, over which the rough stone is transported.

At Point Richmond are located the sheds where vast quantities of the crude stone are cut and shaped into useful forms of architectural

beauty and endless detail of design. All the appliances for handling large quantities of material are very complete at the Point Richmond sheds. When the many shaped pieces receive the finishing touches they are shipped away to their respective destinations on train or boat.

California sandstone is generally of a greenish-gray color. While perhaps not quite so handsome and showy as the red stone of Arizona, yet it is just as strong and durable. It is as fine grained, and as susceptible of receiving a fine surface polish as its Arizona rival. The stone may be cut into fine, ornamental figures—statues, traceries, and handsome forms of art.

Of course it is not susceptible of such delicate chiseling as marble, granite, and other kinds of stone, nor yet quite so durable, yet California sandstone is a permanent building favorite and used very extensively. It is often used in conjunction with granite and various kinds of pressed brick, terra cotta, tile, etc. Often part of some of the large buildings are granite and the rest of sandstone. Brick are frequently used with sandstone, in all combinations, and, invariably, the architectural effect is pleasing and handsome.

When first quarried, the California sandstone is quite soft and easy to saw and chisel, but exposing it to the air and sunlight soon renders it quite hard. Gradually it assumes a gray hue.

It is capable of resisting the action of the elements and the num-

berless little jars that visit San Francisco every few weeks in the way of earthquakes. Some of the very largest buildings of the city are constructed exclusively of California sandstone. The material shows no appreciable erosions, and but very few cracks are produced by the many earthquakes.

The far-famed "Call Building," that shoots aloft like a colossal tower 300 feet high, was constructed entirely of native sandstone.

Sand blasting is often used on many of the buildings of San Francisco to brighten up the dull and weather stained exterior. On all sandstone buildings this work has been found much easier, to produce a good result.

Many of the largest and most handsome churches of San Francisco and Oakland are constructed entirely of this material. As this stone is far easier to work than the native granite, it is a cheaper building material—another potent reason for its popularity. Experience has also demonstrated that sandstone endures that most trying ordeal of all stone—fire and water—fully as successfully, if not more so, than the native granite.

"CALIFORNIAN."

The Chicago Improved Cube Concrete Mixer

MADE BY THE

Municipal Engineering and Contracting Co.

706 Railway Exchange, :: :: CHICAGO, U. S. A.

IS THE FASTEST BATCH MIXER IN THE WORLD AND IS SELF-CLEANSING

It is made in seven sizes as follows:

No. 1, 2	yard batch.
No. 2, 1	" "
No. 2½ ⅔	" "
No. 3, ½	" "
No. 4, ⅓	" "
No. 5, 1-5	" "
No. 6, 1-10	" "

BUILDING BLOCKS

For making building blocks the **Chicago Improved Cube Concrete Mixer** is without a competitor. It handles a very dry mix as readily as any other. It is replacing other makes in Building Block Plants.

ENGINEERS and CONTRACTORS

unite with

Government Engineers

in approving this mixer for use where **Quality of Concrete** is in-

sisted upon, and where large **Quantities** have to be handled in a short time.

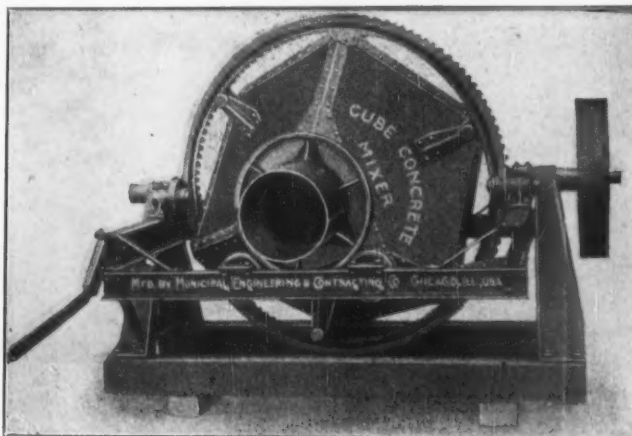
MOUNTING

Mounted on skids or on trucks with or without power, with pulley or gear.

POWER

Furnished with Steam Engine and Boiler, Gasoline Engine, Gas Engine, Oil Engine, Electric Motor, at option of purchaser.

"IT HAS NO INSIDES."



Nos. 4, 5 and 6 on Skids. Hand Dump.

Nos. 1, 2, 2½ and 3 have Automatic Power Dump.
Nos. 1 and 2 also made with Chain Drive instead of large center gear.

COST

Cost of outfit is reasonable and the cost of operation is low.

The cube is the only scientific and rational form of mixer.

HAND POWER

The No. 6 Mixer mixes about one wheel-barrow load in a batch and can be used as a hand-power machine or used with a gasoline engine.

Sidewalk Contractors

find the Nos. 4, 5 and 6 mounted on trucks with engine to be ideal for their work.

These outfits are light and portable.

Any desired combination made. Give us an idea of your wants.

IN MIXING

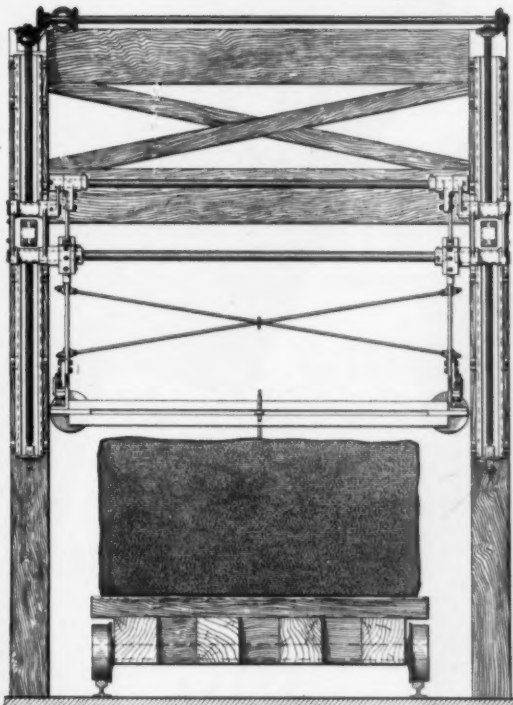
the materials are never separated as in a deflector mixer, or as with a shovel, but are drawn out, doubled over and shaken together 90 times a minute.

This advertisement is expensive, and we want to see results. If inquirers will mention the paper they see our advertisement in, we will appreciate it as a personal favor.

Send for Catalogue R.

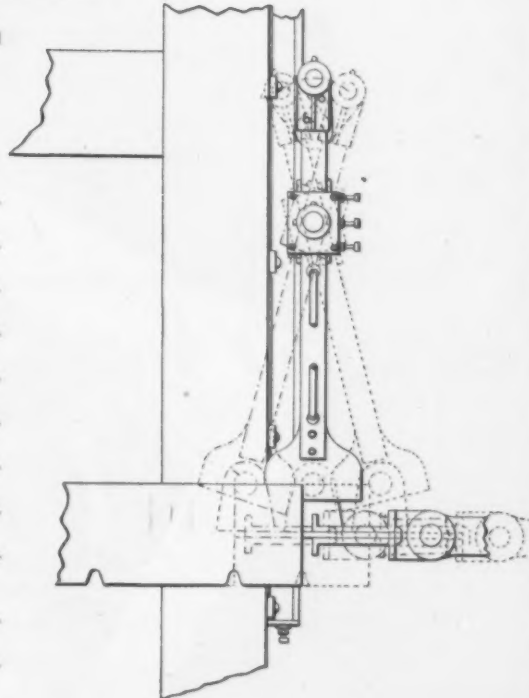
Tell 'em you saw it in ROCK PRODUCTS.

The Thomson Patent Parallel-Motion GANG and RIP SAW



These saws can be seen
in operation at any of
the following stone
yards:

CARR & BALL,
Harrison, N. J.
B. A. & G. N. WILLIAMS,
68 St. and Ave. A, N. Y.
J. J. SPURR & SONS,
Harrison, N. J.
BARR, THAW & FRASER CO.,
Hoboken, N. J.
DURIE & DAVIDSON,
Harrison, N. J.
DAVID G. MORRISON,
L. I. City, N. Y.
H. J. HOERNER & CO.,
Lister Ave., Newark, N. J.
JOHN R. SMITH'S SON,
103 St. and E. R., N. Y. City.
JAMES MUIR,
Bay St. Ave., Springfield, Mass.
KIRKPATRICK BROS.,
23rd St. and Washington Ave.,
Philadelphia, Pa.
BUCK & GALLAGHER,
Ninth and Wolf St., Phila., Pa.
SOUTH SIDE STONE CO.,
Bloomington, Ind.



STONE WORKING MACHINE COMPANY

October 1, 1903.
The Stone Working Machine Co.,
No. 43 Wall St.,
New York City.

Gentlemen—In reply to
yours of recent date, would
say that we had such confidence
in the Thomson Attachment
for stone saws that we put
in the first two manufactured,
and, pleased to say, that our
judgment has been more than
justified. We are confident
there is nothing on the market
equal to them. In over two
years use the cost of repairs
has been practically nothing,
and they continue to give every
satisfaction. You can use this
letter if it helps you in your
sales. Yours truly,

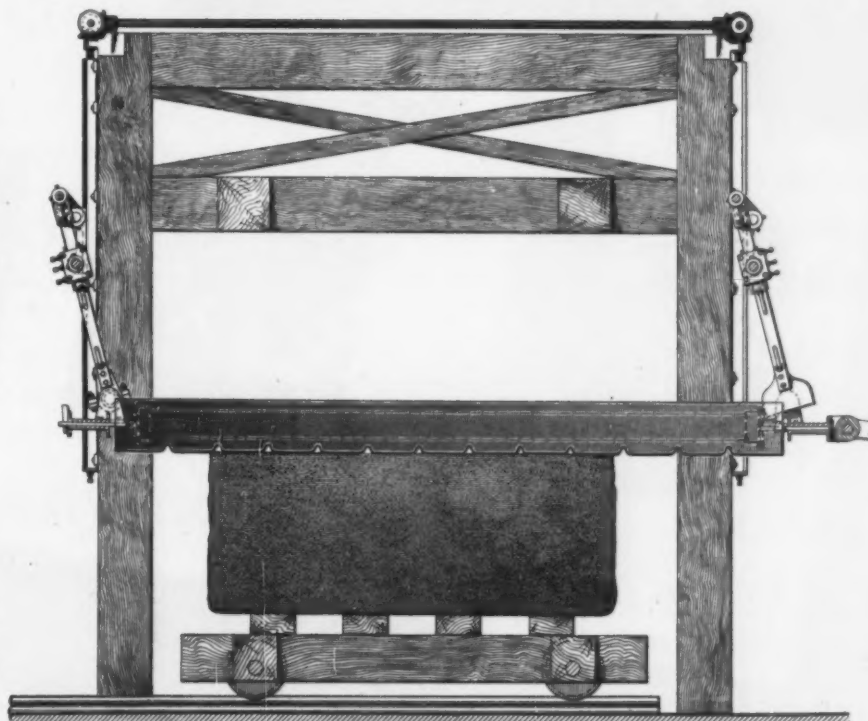
CARR & BALL,
111-121 Passaic Ave.,
Harrison, N. J.

Manhattan,
New York City,
October 6, 1903.

Stone Working Machine Co.,
41 Wall St., City.

Gentlemen—In reply to your
letter of even date, we would
say that we have now been
using two of your attachments
on our saws for several months,
and we consider them a de-
cided improvement.

Yours truly,
B. A. & G. N. WILLIAMS,
B. A. Williams, Pres.



Harrison, N. J.,
October 15, 1903.
Stone Working Machine Co.,
New York City.
Gentlemen—Replying to
yours of 9th instant, would
say that we have had two of
your parallel saw attachments
working for the past five
months, and are satisfied with
the results obtained. We con-
sider it a great improvement
in stone sawing.

Yours very truly,
J. J. SPURR & SONS,
J. J. Spurr, Pres.

October 27, 1903.
Stone Working Machine Co.,
Nos. 41 and 43 Wall St.,
New York City.

Gentlemen—Yours of the
26th instant received. In re-
ply would say saw is working
satisfactorily and doing all you
claim for it. Please alter our
other gang-saw as soon as pos-
sible.

Enclosed find check as per
agreement. Yours truly,
BARR, THAW & FRASER CO.,
13th and Adams Streets,
Hoboken, N. J.

Kirkpatrick Bros.
23d St. and Washington Ave.
Philadelphia,
February 2, 1905.
Stone Working Machine Co.,
41 and 43 Wall Street,
New York City.

Gentlemen—Yours of 1st
inst. received. In answer
would state that we have had
a complete new saw of yours
in use for two months. It has
been working very satisfac-
torily. We can saw more than
twice what we could with the
former gang saws, and require
but little more power.

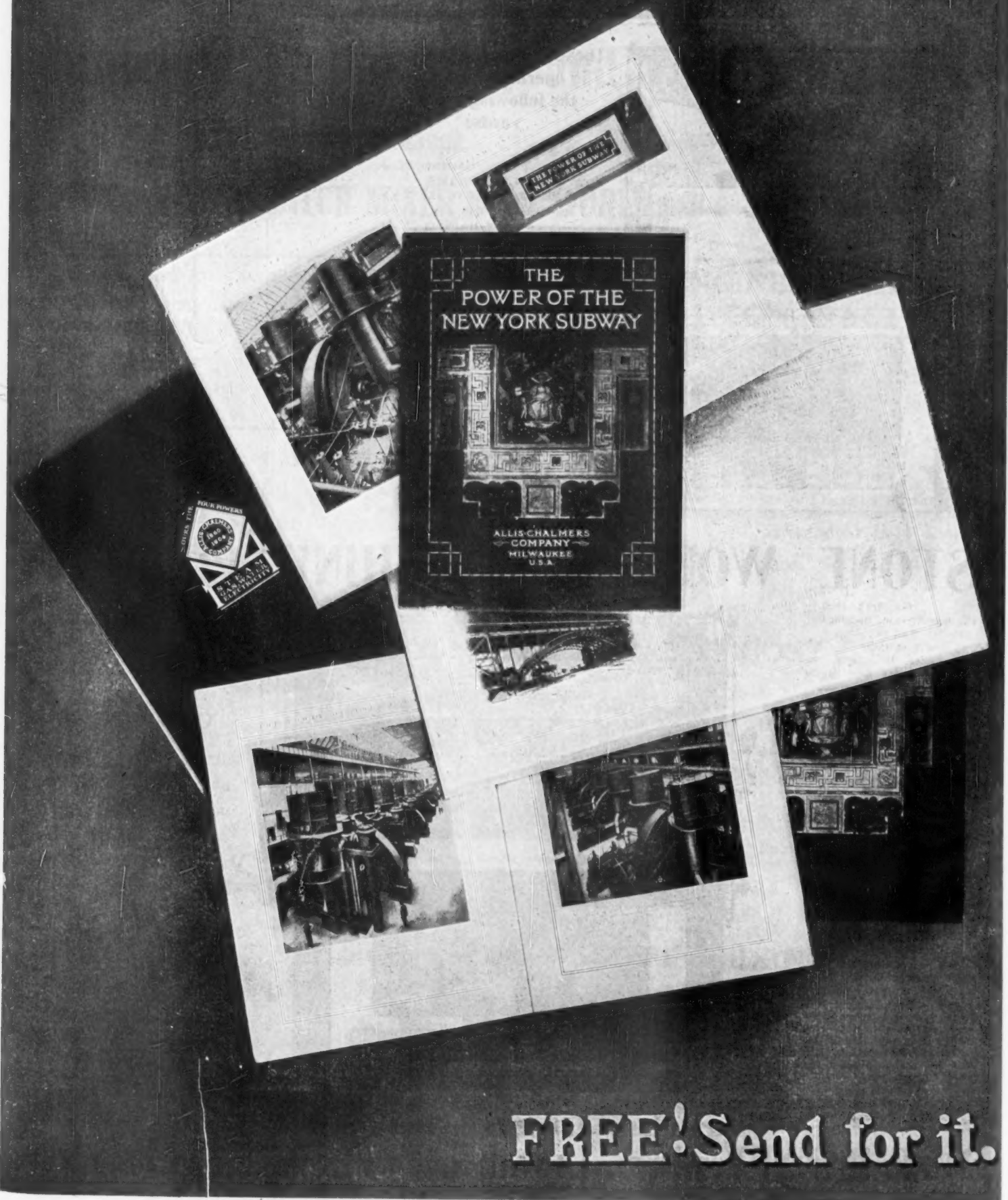
Yours truly,
KIRKPATRICK BROS.

SOLE OWNERS OF ALL PATENTS AND MANUFACTURING RIGHTS

W. F. RANNEY, Mgr., 43 Wall and 43 Exchange Pl., N. Y. City

Tell 'em you saw it in ROCK PRODUCTS.

A Book on "POWER"



FREE! Send for it.

Canadian representatives, Allis-Chalmers-Bullock, Ltd., Montreal.

LEADING PRODUCERS OF BEDFORD OOLITIC LIMESTONE.

We are producers of Buff and Blue

AUDITORIUM HOTEL AND ANNEX, CHICAGO.

Bedford Oolitic Limestone,

Sawed, Turned and Machine Dressed.

OOLITIC STONE CO. OF INDIANA.

CONTROLLING

ROBERT REED, Sec'y-Treas.

THE BEDFORD QUARRY CO.

BEDFORD,

AND THE NORTON-REED STONE CO.

INDIANA.



The Above Buildings Were Erected From the Buff Limestone of Our Quarries.

Chicago and Bloomington Stone Company

BLOOMINGTON, INDIANA.

Quarry and Mill.

Anything you want in

Oolitic Limestone

Rough, Sawed,
Planed, Turned,
or Bridge Stock.

GET OUR QUOTATIONS ON ALL JOBS

B. B. B. BEDFORD BUFF BLOCKS AND SAWED STONE

We are in a position to furnish choice Buff Blocks or Sawed Stone on short notice and at best prices. Address all communications to

THE EAGLE STONE COMPANY, Bloomington, Ind.

SAW BLADES THE KIND THAT LAST

WE MAKE CUT STONE WORKING DIAGRAMS
AND SETTING PLANS.

NASH'S "CUBING BOOK" BY MAIL \$2.00.

THE STONE WORKERS' SUPPLY CO., Bedford, Indiana.



Limestone Tools

SPECIAL PRICES ON

Bush Hammers, Tooth Axes,
Hammer Head Tools.

Send for Special Rock Products Offer.

W. H. ANDERSON & SONS,
INCORPORATED.

TOOL MANUFACTURERS.

27 St. Aubin Avenue, Detroit, Mich.

The Rowan County Freestone Co.

QUARRIERS OF

KENTUCKY BLUESTONE

Mill Blocks, Dimension Stone,
No. 1 Masonry Stone.

ON LEXINGTON DIVISION
CHESAPEAKE & OHIO RAILWAY,

FARMERS, KY.

ALLEGHENY QUARRIES LANCASTER, OHIO.

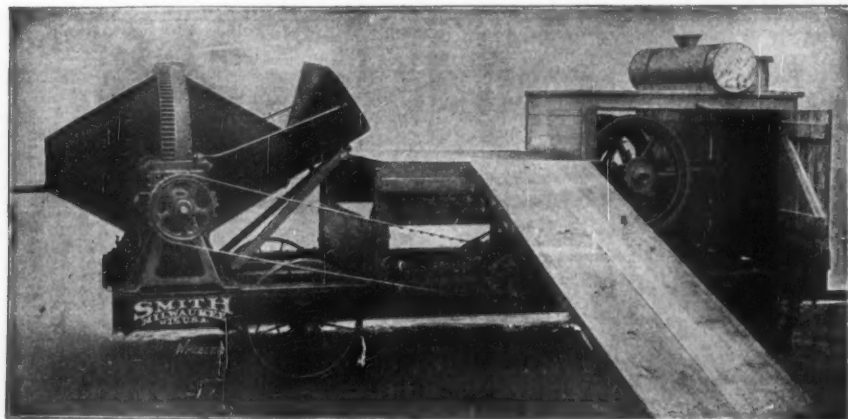
Rough, Cut and Sawed Sand Stone.
RAILROAD BRIDGE STONE A SPECIALTY.

SAND

Crushed Sand Stone for Concrete.
Sand, 98 per cent. Silica, suitable for core work, Iron and Steel
work, Cement Block and Mortar. Also Fire Sand.

G. S. FRAMBES, Successor to F. C. NEEB.
ESTIMATES FURNISHED.

Tell 'em you saw it in ROCK PRODUCTS.



No. 0 Mixer, Rear Discharge.

Smith Concrete Mixer

900 in use; 6 sizes; any combination of power and mounting. Just the thing for

Sidewalk, Curb and Gutter

Write for Catalogue.

Contractor's Supply and Equipment Co.

CHICAGO

NEW YORK

KANSAS CITY



"MONARCH WIRE ROPE"

The Most Desirable Rope made for
Quarry and Contract Work. & &

It is not the color of the Strand that makes Monarch Rope so superior, but the material it is made out of. The Whyte strand merely ensures your getting the right rope.

MACOMBER & WHYTE ROPE CO.,

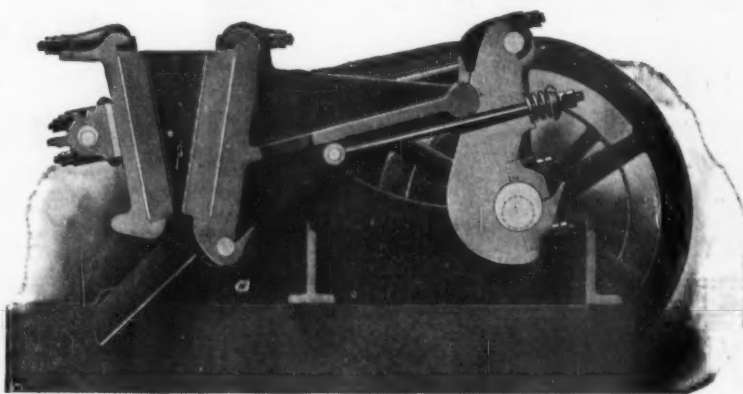
19 and 21 South Canal Street, CHICAGO.

131 Worth Street, NEW YORK.

SAVE THE PIECES FROM THE QUARRY

There is a Good Profit in Crushed Stone

THE NATIONAL IS THE NEW IDEA. It is built low down, consequently when decked over is Easy to feed and safe to operate. Steel side arms take the crushing strain. Safety devices prevent breakage. Lightest weight and easiest running crusher ever built.



SECTIONAL VIEW OF JAW CRUSHER.

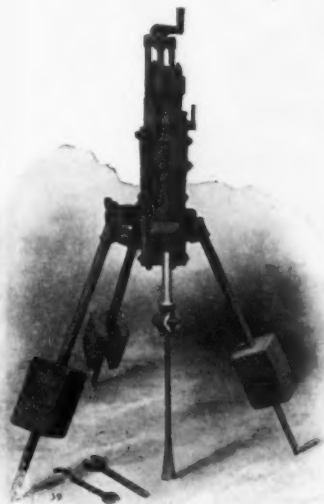
The National Solid Frame Rock Crusher, built in four sizes, 8 x 15 to 11 x 22 Jaw openings. 10 Tons to 30 Tons hourly capacities.

We can design an inexpensive plant for you, which will yield a Steady Income from the material which would otherwise be wasted. Crushed stone is being used more every day.

NATIONAL DRILL & MFG. CO., Head Office: Pullman Bldg., CHICAGO, ILLINOIS.

Tell 'em you saw it in ROCK PRODUCTS.

COM-PRESSORS **ROCK DRILLS** AIR TOOLS



RAND "LITTLE GIANT."

BURIED ALIVE!

VERY MUCH ALIVE

AT THE BULLOCK QUARRY.

DUG UP AGAIN!

O. K.

How many drills could stand
that kind of a test?

We build every size and Style of

AIR COMPRESSORS

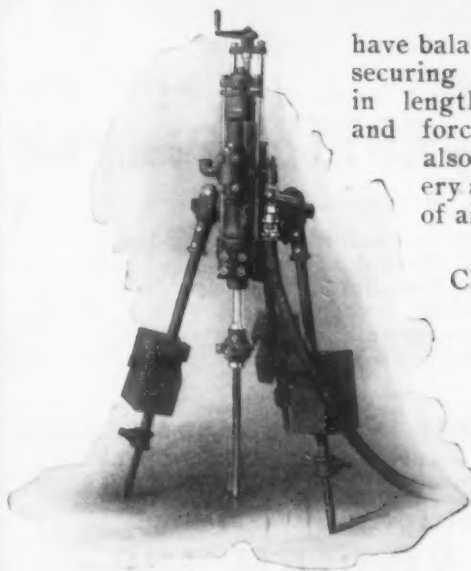
BOSTON.
BUTTE.
CHICAGO.
DENVER.
DULUTH.

RAND DRILL CO.
NEW YORK.

PHILADELPHIA.
PITTSBURG.
ST. LOUIS.
SALT LAKE CITY.
SAN FRANCISCO.

SULLIVAN MACHINERY CO.

SULLIVAN ROCK DRILLS



have balanced valves,
securing wide range
in length of stroke
and force of blow;
also quick recovery
and economy
of air or steam.

Catalogue 51.

Channelers

Compressors

Quarry
Machinery

CLAREMONT
NEW YORK
PITTSBURG

RAILWAY EXCHANGE
CHICAGO, U. S. A.
EUROPEAN AGENTS 2 RUE RAFFET PARIS

ST. LOUIS
DENVER
EL PASO

DON'T WAKE UP THE DEAD

with some old fashioned rattle-
trap of a machine that is all worn
out and shakes the earth because
of its lost motion. Buy an up-to-
date machine that runs as
smooth as grease itself.
We have them.

**Chicago
Pneumatic
Tool Co.**

Fisher Building,
CHICAGO, U. S. A.



IMPROVED CHICAGO ROCK DRILL.

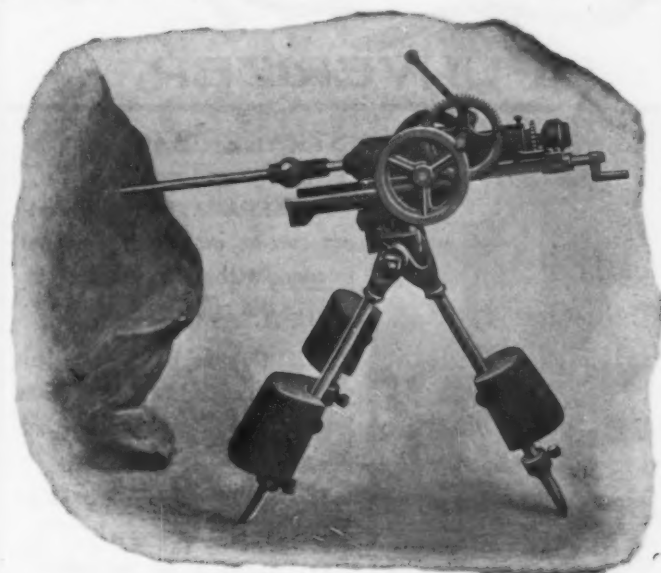
Awarded two Gold
Medals at the Lou-
isiana Purchase
Exposition, St.
Louis, Mo., 1904.

BRANCH OFFICES:

95 LIBERTY STREET, NEW YORK.

431 EXCHANGE BUILDING, BOSTON.

PLUG AND FEATHER
—WITH THE—
Jackson Hand Power Rock Drill



One man with this drill will do the work of three men drilling
with hammers and bits. Its records in granite are wonderful. Guar-
anteed against breakage for two years. Easy to handle or set up.

1000 IN USE.

WRITE FOR CATALOGUE No. E 16 AND PRICES.

H. D. CRIPPEN, 25 BROAD STREET,
NEW YORK.

Tell 'em you saw it in ROCK PRODUCTS.



Latest Improved KOTTEN Pneumatic Tool.

This tool has absolutely but three parts,
Cylinder, Piston and Head.
No Latch Pins, Springs or Locks. All
parts properly tempered.
No chance for wear or clogging and de-
rangement of air ports.

CRANE SURFACERS.

BABY DRILLS,

VALVE AND VALVELESS CARVING TOOLS.

BABY SURFACERS.

PLUG DRILLS,

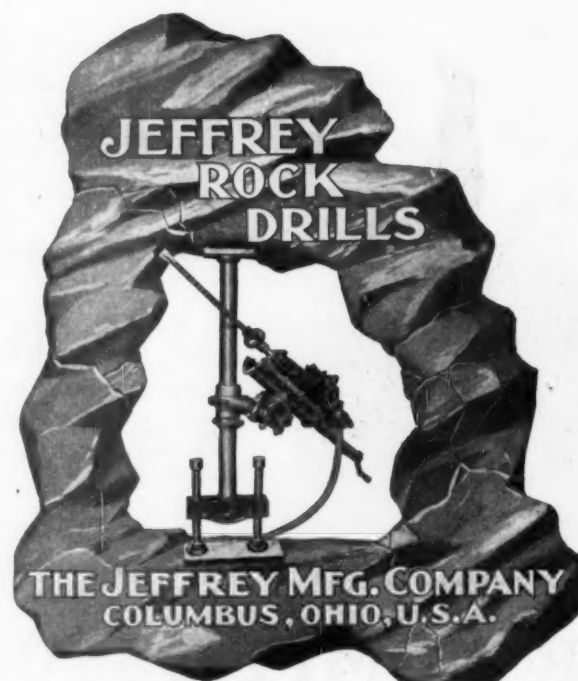
COMPLETE PNEUMATIC PLANTS.

H. G. KOTTEN, M'f'r,

120 Liberty Street,

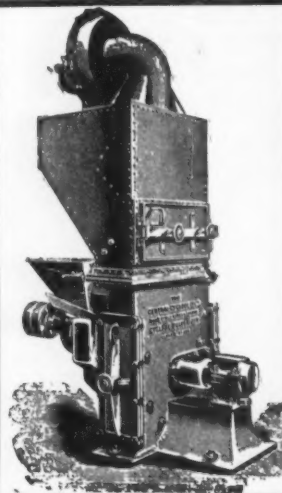
NEW YORK, U. S. A.

CENTRAL STATES: Sole Agents, Foster & Hosler, Chicago, Ill.
PACIFIC STATES: Sole Agents, Berger, Carter & Co., San Francisco, Cal.



Cyclone

PULVERIZER.



STRAKER'S PATENT.

AIR SEPARATION—The prod-
uct can be made of any desired
fineness without sieving.

DUSTLESS in operation.

OUTPUT per H. P. per hour
of the Cyclone Mills is much
larger than that of any other
mills.

We build SCREEN SEPARA-
TION MILLS too.

CATALOGUE on request.

WRITE US WITH SAMPLES AND PARTICULARS.

E. H. STROUD & CO.

Manufacturers for U. S., Canada & Mexico.

30-36 La Salle Street,

CHICAGO, U. S. A.

Marvin Electric Drill Co.

MANUFACTURERS OF

Electric Rock Drills
and Generators.

Alstons Parallel Stone
Cutting Attachments
and Punches.



BINGHAMTON, NEW YORK.

"Wood" Rock Drills

ARE SOLD BY

J. B. WALLIS, Ashley, Pa.
A. S. MORGAN, Birdsboro, Pa.
HALL STEAM PUMP CO., Pittsburg, Pa.
HAROLD L. BOND CO., 140 Pearl Street, Boston.
ROBERT J. WOOD, 31 So. Canal St., Chicago, Ill.
MOSES P. JOHNSON, 715 N. Second St., St.
Louis.
J. W. BURNETT, Blue Ridge Springs, Va.
WM. STAIRS, SON & MORROW, LTD., Halifax,
Nova Scotia.

Built to be "Cleaned up with a Sledge Hammer"
and "Wiped off with a Scoop Shovel" and yet
"Stay With You."

EXHIBIT AT FAIR, Mines and Metallurgy
Building, Block No. 30 B.

Send for Testimonials.



Factory PATERSON, N. J.

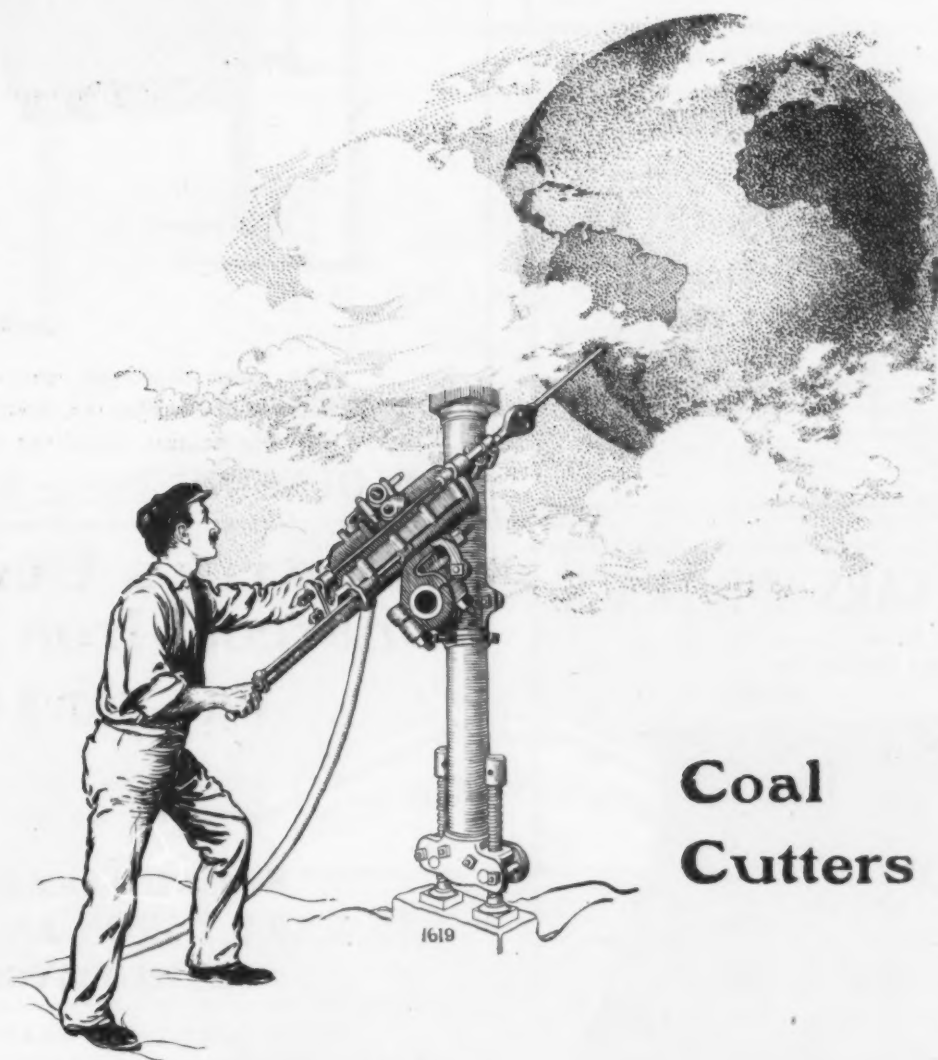
Tell 'em you saw it in ROCK PRODUCTS.

ROCK DRILLS

THAT PUT HOLES IN THE EARTH
FOR STEAM OR COMPRESSED AIR.

**Air Com-
pressors**

ESPECIALLY
ADAPTED FOR
MINING



**Rock
Drills**

FOR ALL
KINDS OF
SERVICE

MOUNTED
ON EITHER
TRIPOD OR
COLUMN

FOR HARD
OR SOFT
ROCK

**Coal
Cutters**

**THE INGERSOLL-SERGEANT
DRILL CO.**

NEW YORK

26 CORTLANDT ST.

CHICAGO, ILL.
CLEVELAND, OHIO.
PITTSBURG, PA.

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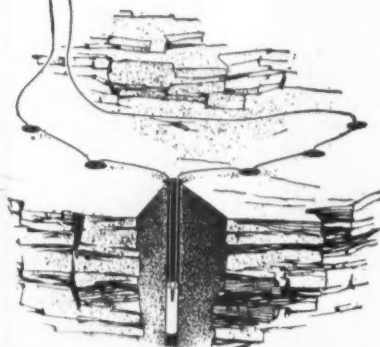


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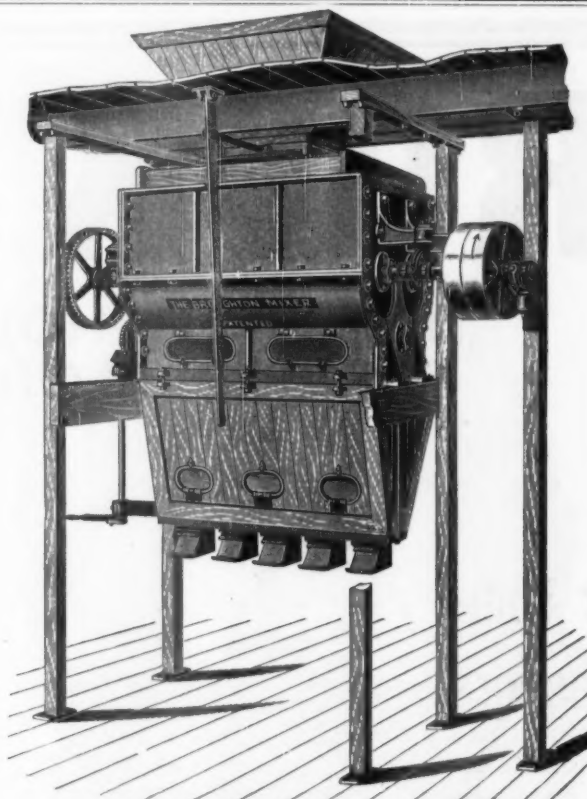
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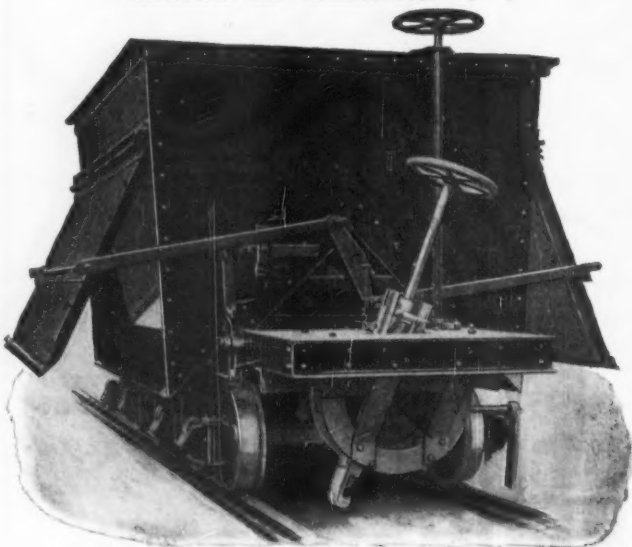


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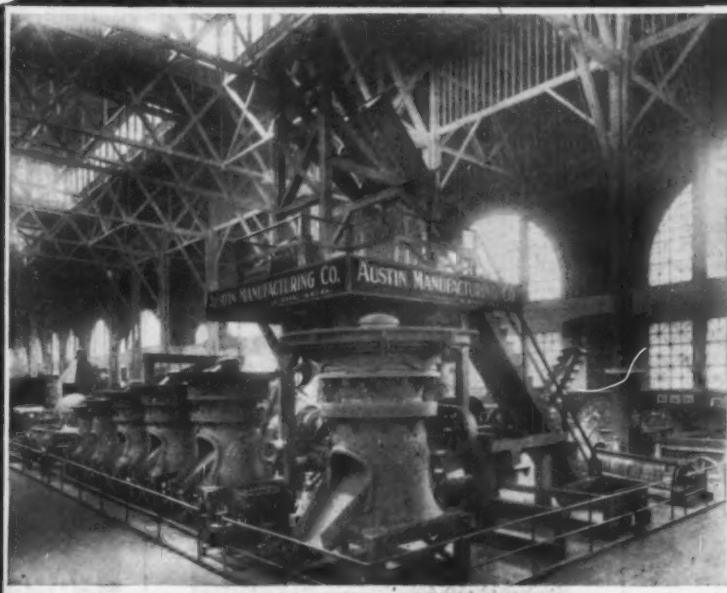
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The Best Machinery for
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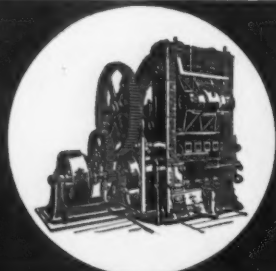
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Entered as second-class matter March 4, 1904, at the Post Office at Louisville, Ky., under the Act of Congress of March, 1879.

THE FRANCIS PUBLISHING CO.,
Publishers.

E. H. DEFEBAUGH.....President and Manager.
FRED W. RUGG.....Secretary.

NEW YORK OFFICE—Room 502, 136 Liberty Street.
CHICAGO OFFICE—Room 1312, Tribune Building.
NEW ENGLAND OFFICE—16 Merchant St., Barre, Vt.

A monthly trade journal devoted to the interests of the manufacturers and dealers in rock products and kindred lines, including Lime, Cement, Salt, Sand, Slate, Granite, Marble, Sandstone, Grindstones, Artificial Stone, Emery Stone, Quarries, Monuments, Manganese, Asphalt, Phosphates, Plaster, Terra Cotta, Roofing and Roofing Tile, Coal, Oil, Mineral Wool, Brick, etc.

The mission of ROCK PRODUCTS is to serve the trade in any and every honorable way possible, to promote better profits and make life more pleasant for those engaged in the business to which it caters. With this end in view, criticism is courted, and all are invited to use its columns to further ideas and suggestions for the good of the trade. The office, too, is at the service of the constituents of this paper; so when you want to buy or sell, or merely ask a question, write, and when you are in town, call and make it your headquarters.

"TELL 'EM YOU SAW IT IN ROCK PRODUCTS."

SUBSCRIPTION RATES, \$1.00 per annum, postpaid anywhere in the United States, Canada or Mexico; \$1.50 elsewhere in the Postal Union. Single copies, 10 cents.

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THE FRANCIS PUBLISHING COMPANY,
431 W. Main Street, Louisville, Kentucky.

LOUISVILLE, KY., MARCH, 1905.

What is the Office of an Advertisement in a Trade Paper?

PEOPLE who advertise frequently expect too much. When you make an investment you are satisfied if you get 10 per cent. return. Now then, why should you not be satisfied if, when you pay out money for advertising, the business done yields you 10 per cent. on the money invested in the advertisement, because aside from this you have the publicity and are liable to hear from this a year or two after you have placed business there, through a subscriber or through a sample copy, which has reached some one who at that time was not interested, but saw the advertisement, remembered where it was and what it was, and when he was in need of your product, immediately referring to that source, got in touch with you.

It is a mistaken idea of many that when we have traveling men on the road we do not need advertising. This is not the case, however, as most traveling men will tell you that it is very valuable to him that his firm should be known by the people whom he calls upon, and that these people should feel that the firm is progressive, up-to-date, and a well known concern. Architects as a rule, do not advertise, yet the fact of the case is that architects need advertisement more than almost any other profession, and advertising by architects would probably be more productive than almost any other men.

The office of the trade paper advertising is or should be, to lead the man up to the trough, and it is up to your salesman or your sales department to make that man feel thirsty and drink thereof. Your advertisement should be so worded and so placed as to appeal to the man that you desire to reach. No expense should be spared in order to give your advertisement sufficient display and at-

tract sufficient attention. Originality in design is always desirable. The busier you are, the more should you advertise, then when a dull season comes you will hold on where others fall.

Experienced Testimony.

IN talking the other day with one of the most successful business men in the country, we asked him to what he attributed his success in all of the large industries with which he had been connected.

His reply was: "I fully believe that constant and consistent advertising has contributed more than any one thing to the success of the various industries with which I have been connected."

He said: "There has been times when other members of the firm said, 'Why should we advertise now as we have all the business we can do?' but I have always insisted that it was bad policy to let up on advertising at any time for this reason: because if business is slack and funds are short we want new customers, that we can do a cash business with, if necessary, and when business is booming we want to keep it going that way." He said further, "I believe in selecting the journals in our line, or the journals that reach the people we want to sell to, and carrying strong ads."

ACTIVITY in the stone cutting sheds will soon begin anew.

WHEN there is nothing to complain of beside the weather, conditions are sound.

HIGH grade sand, such as crushed and finely ground quartz, is in much request.

STRUCTURAL slate is being specified in the plans of the architects to a noticeably growing extent.

NOT the least of the attractions of artificial stone is that of getting past the reach of the bricklayer.

THE ground hog lets up with his claim on the weather March 16, in time for St. Patrick to have a good day.

MARBLE interiors of artistic design will never become unpopular or get out of fashion with people of the highest taste.

WHEN you think of the vast volume of belated freight traffic in transit at the present time, you are not half so sore about your own non-arrivals.

Concrete contractors are getting ready for a busy season by ordering cement and crushed stone, and there will be a great "mix-in" when the ground hog finishes his last week.

THE Master Composition Roofers' Association meeting at Indianapolis had a small attendance, but they were all hardy hearts and true. Look for a bumper meeting at Buffalo next.

IN the lobby at the lime meeting there was a good deal of hydrating talk, for every progressive lime manufacturer finds that a very pleasing subject, and not without good reason, too.

CEMENT operations will be conducted on a larger scale this coming season than ever, but the indicated and estimated demand will preserve a more conservative price for this indispensable product.

MUNICIPAL improvements in the shape of paving of every kind, and sewer construction will call for the largest amounts of these materials the coming season than have ever been used in any previous year.

CEMENT block manufacturers who attempt to make uniform blocks for any particular job without the use of a good concrete mixer, are up against a tough proposition. It's the cheapest as well as the best way of doing it.

WE heard a successful contractor say that all his high salaried men were cheap, and the low price kicker is only good for a loss anyway—adding something to the volume of work done, but never a cent into the profit column.

THE National Lime Association meeting in New York was well attended by the best talent in the business, and the report found elsewhere in this number will interest every one of the stay-at-homes. There was warm interest in spite of what the mercury was a-doing outside.

WHEN the festive bricklayer thinks on the warm days next summer, blinking at the half empty mug as he toasts his shins at the barroom stove, he merely concludes to raise his per diem, for his loss has been working overtime to secure contracts, without even a holiday intermission.

THE twenty-four sculptures of the Hall of Records, New York City, have been completed of Maine granite, and shows that the granite to be obtained from the quarries of New England can compete or even excel that brought from foreign shores, even in the highest art productions.

HARD wall plaster, as developed and employed by the American manufacturer, has surpassed in beauty and value at smaller price the wildest dreams of our antecedents. The exquisite ornamentation of classic effect now commercially listed is what the ancients considered the highest art.

KEEP the shop properly heated, so that the workman can have physical comfort. The discount on a day's work by reason of carelessness in this regard often amounts to double the expected profit on the work in progress—and that means nothing if it does not mean running the plant to produce a loss.

FIFTY per cent. of all the accidents are traceable to carelessness, and ninety per cent. of the other half are due to ignorance. If the apprentice learned his trade better before demanding a man's pay the ignorance could be remedied to an extent, and the more intelligent a man becomes the more careful he is.

CRUSHED granite that will pass a ¼-inch ring is wanted by the leading concrete contractors in big quantities. Let's hear who is going to take care of this business. Don't be backward. Rock Products has room enough for all your announcements, and our readers want to see them, as a guide for placing orders.

THE open shop for American workmen in every line of effort is making rapid and steady strides. It opens the door of opportunity to intelligence and diligence, giving a broader freedom to the individual, and affords a natural solution to many of the incompatible problems that came over from the old world with the despotic exclusion idea of the labor agitator who never works himself.

SAND-LIME brick as an industry is only four years old in this country, but it has taken its position firmly established in the front rank as a building material. Experts of wide experience now acclaim its destiny, and no architect can be found who has not high commendation for it. Fire tests in actual practice further recommend it to the attention of the insurance people, and they speak well of it, too.

BUILDING operations in the South never have the long period of winter dullness which so many of us are accustomed to. In the Gulf States work goes right on with only a few slight interruptions, mainly from rains. Those contractors who are fortunate enough to land on a winter job South usually make a good thing of it. The new business impetus of that section is making lots of work, if all the reports are true.

From Our Own Correspondents.

GREATER NEW YORK.

New York, March 2.—On the first of February William G. Schardt, chairman of the National Brotherhood, and William Webb, president of the Amalgamated Carpenters, were in town endeavoring to end the lock-out whereby 2,500 carpenters of both bodies are idle. They held conferences with the Master Carpenters' Association and Mr. Schardt said a proposition had been made for the brotherhood to take in the members of the new carpenters' unions without fines. Mr. Harding, of the Press Committee of the Building Trades Employers' Association, said that no such plan had been submitted, but one of an entirely different character which he would not make public. The independent organization of builders met February 4, and adopted the name of The Master Builders' Association and declared their intention to apply for a charter. Some fifteen firms were represented, including John R. Sheehan & Co.; The Thompson-Starrett Co.; H. Stevenson; J. Dwyer; The Geo. L. Walker Co., and Ryan & McFerran.

John Sheehan, Nicholas W. Ryan and Samuel B. Walker are respectively president, vice president and secretary, pro tem. Their press committee made this statement: "We are not fighting any other body of contractors, but this organization is absolutely necessary in order that the hitherto independent general contractor may break down restrictions in procuring material, which have been established by trade associations of employers."

On February 5, all negotiations concerning the carpenters' lock-out were declared off, and a prolonged fight this spring now seems inevitable. The other unions, especially the Tile Layers' Union, were anxiously awaiting the result, and now this union has allowed its members to go back to work under the arbitration agreement, while keeping their cards in the old union, which scheme will help them somewhat to better stand the fight which is foreshadowed for the spring.

The brotherhood of painters, which refused to accept a plan of amalgamation with the Painters' Society, and which was to have been suspended by the Associated Building Trades, has been allowed more time. Both the unions are now working under the arbitration agreement. The Brotherhood of Painters sent out a new plan of amalgamation on the 5th to get the union feud ended before the building season begins.

The new central body of building trades unions called the Associated Building Trades, held a meeting on February 1, in which it decided that all affiliated unions must stop fighting one another or be expelled. The new central body is composed of unions which are working under the arbitration agreement, and of those which are opposed to it. It claimed a membership of 83,000.

On February 8, the Building Trades Employers' Association of Hudson County, N. J., locked out from 5,000 to 6,000 men. The main cause was the refusal of the Building Trades to cause a settlement of a fight between rival steam fitters' unions. This will affect the New York situation only inasmuch as a number of the New York men have slipped into work in Jersey City and other nearby localities affected by the lockout.

On February 8, the Bricklayers' and Masons' International Union at its convention in San Francisco, expelled Bricklayers' Union 33, of this city, in the old dispute over fireproofing. The convention also reaffirmed the Trenton decision of two years ago, whereby any contractor paying union wages under union conditions, could install fireproof brick. As an answer to this the unions here have made an agreement with the Mason Builders' Association, containing the usual provision that fireproofing work can not be sublet, but must be done by members of that association. And as a compensation for thus standing by the local mason builders the bricklayers are to have their wages advanced from 65 to 70 cents per hour, beginning March 1.

On February 15, the board of governors of the Building Trades Employers' Association, at a special meeting, formerly expelled the Thompson-Starrett Co., on the charges of having employed the locked-out members of the Brotherhood of Carpenters and discharged members of the new carpenters' union, to make room for them. This decision carries with it expulsion from all the subordinate associations to which the company belonged. The company's bond of \$4,500.00 was also declared forfeited.

The Thompson-Starrett Co., immediately after its expulsion, began to make preparations for resuming work with the members of the locked-out unions, and ignored the new unions formed to replace them. The president, Theodore Starrett, said: "We are not trying to disrupt the building industry, but are trying to bring order out of chaos. We have partially succeeded, and I think the Building Trades Employers' Association will later realize this. We did not believe in compulsory arbitration, at the time we agreed to it in 1903, and do not now."

On February 12, the Housesmiths' Union decided to wait a year before presenting its demands for a raise of wages from \$4.50 to \$5.00, and the jurisdiction of the union was extended to take in all of Long Island, as well as a radius of thirty-five miles from City Hall.

The new Associated Building Trades formed to take the place of the old Building Trades Alliance, which was largely disrupted by so many unions going over to the employers' arbitration agreement arrangement, signaled its existence by ordering a strike on a new building on E. 27th Street, involving 200 plasterers, steam fitters and tile layers.

The general arbitration board of the employers' association and the unions, which was made complete by the admission of the delegates from the new unions, arranged yesterday to meet forthwith at the Building Trades club, to begin a revision of the arbitration agreement. Much trouble had been prophesied on the part of the regular unions, twenty-five in number, which were expected to object to the admission of the new comers, which they looked upon as a sacrifice of the locked-out unions, but the Building Trades club indicate no anxiety on this score, and express the assurance that everything will go smoothly, and say that as far as can be seen the outlook for a peaceful building season is good.

The Associated Building Trades, the organization which has succeeded the old Building Trades Alliance, of which Weinseimer was the head, has expelled the Brotherhood of Painters for refusing to accept a plan of amalgamation with the Amalgamated Painters' Society. The former has a membership of 5,000 and the latter of 1,500.

On Wednesday, the first of March, the 70 cents per hour schedule went into effect for the bricklayers, with \$1.40 per hour for extra time, so that by working twelve hours a bricklayer can make \$11.20 per day.

The first meeting of the general arbitration board of Building Trades Employers' Association and the unions working under the arbitration agreement was held on February 28, and it was agreed that some of the provisions of the arbitration agreement might be changed or modified, and a convention was accordingly called for March 21, to consist of three employers in every trade, and three representatives of every union working under the arbitration agreement.

Price of Brick Holds Steady.

The market for bricks has been very slow this month, as it has been for all forms of building materials, owing to the very unfavorable weather. Nevertheless Hudson Rivers still hold at \$10.25 to \$10.65, and even a higher price is looked for by many, just as soon as the spring building sets in.

Much interest has existed amongst the stone and brick men as to the plans for this building, which were filed on February 27. It is to be 5-story and basement, with a cupola and dome. The facades are to be of granite and limestone with trimmings of terra cotta. It will cover the center market block and will cost, for the building, \$700,000.00.

Increase of Building Permits for January.

The permits in the Manhattan, Brooklyn and Bronx Boroughs represent an outlay of three times more than that for January, 1904. Then the plans called for thirty-eight buildings in Manhattan, representing a cost of \$1,452,400.00. For January, 1905, there were plans for 137 buildings, representing a cost of \$7,058,850.00. In Brooklyn and the Bronx the increase is in the same proportion.

Cement Promises Well.

The cement market is in excellent condition and the outlook is bright for a very large trade at good prices. The mills are all relieved of the incubus of a big surplus which weighed so heavily on them last year and all pressure to sell has been lifted. Unless, for some very special reason, no long contracting is being done, all the mills being content with the spot orders and spot prices that they are getting, and all are ready to take their chances on the natural development of the market. There is a disinclination to make prices for any time ahead, as was indicated by the incident told by the New York manager of a large cement company. He said: "A young man called on me and said smilingly, that he was the freight agent of a Western railroad, and that he came on the pleasant errand of arranging for the shipment of our nice order of thirty carloads to a Western point. I told him that he brought me bad news, at which he became much crestfallen. I then explained that we had given that house a two weeks option, and that being the next to the last day I had been fervently hoping that they would not respond, because I can break that shipment up right now into a number of spot orders at better prices, and as we get into the season I think the prices will become better." This was the general feeling, and the fact that the labor troubles might tie up the New York market again this year, had no bearing in the matter, as the whole general outlook was so good that the city demand here cut no figure in the prospect. Moreover all the machinery houses that supply the cement trade reported that the mills are getting active and are repairing and refitting to an extent that gives them the hope of a very good season also. This good outlook is especially gratifying to the trade after the two unremunerative years that they have weathered through.

Slag Cement Plants Soon Ready for Business.

Mr. C. J. Curtin states that the work on the two-story cement plants which are being built at Ashland, Ky., and at Sydney, N. S., is progressing rapidly and satisfactorily, and he hopes to have them both completed and in operation by the early summer, in time to participate in the good business which, all his advices tell him, is in store for the cement trade all over the country.

Good Outlook on Lime With Fair Prices.

Mr. Perry, of the Rockland Rockport Lime Co., reported an excellent business for January but February has been slower simply because work had been halted everywhere by the very cold and bad weather. Prices hold along the same: common \$0.87; lump, \$1.02; selected finishing, \$1.47 on 500 barrels or more; under that number 5 cents more per barrel. The outlook is good for a busy season at steady prices.

Farnam "Cheshire" Lime for Dealers Only.

In calling at the sales offices of the company at 38 Cortlandt Street, Mr. C. J. Curtin stated that the spring trade had opened very well and that all indications pointed to a very satisfactory year in the sale of Cheshire lime. It is the settled aim and plan of the company to sell their lime to dealers only, which policy will be lived up to the letter in every instance, and prices will be steadily maintained.

Will They Repeat Last Year's Folly

Last year much money was just thrown away by competing lime companies unnecessarily cutting prices to consumers. They had no occasion to do so, and had not the excuse of being forced into such a course by the larger concerns, because these latter held their prices up steadily through all the slashing, and the others had merely to follow in their wake and reap the benefit of a steady higher market. But they preferred to throw that all away by international quarrels, and now that the season starts again with what bids fair to be a good market, with good, steady opening prices, it is interesting to see whether the useless and wasteful price cutting of last year will be repeated.

Information for European Customers.

The Kent Mill Co., 170 Broadway, recently received a query from one of its European customers for information as to packing lime in paper sacks. The company wrote to a number of its customers here, and the response from one large house said: "We successfully ship ground lime in paper sacks, using a bag that measures 17x34, and is made of all rope paper. Inasmuch as the contents weigh from 80 to 85 pounds it is necessary for us to have a strong bag and we aim to get one in which the

paper yields to a test of 85 pounds the long way of the bag, and from 35 to 40 pounds the cross way, breaking test on one inch strips. The principal objection to shipping lime in paper is that when the lime commences to grow old, it air slakes and swells and bursts the bag. Within the past two or three years we have developed a hydrate of lime, and as this lime does not swell with age and can not air slake, it is perfectly safe for us to market it in paper sacks, which we are doing generally. Inasmuch as the contents of the bag just mentioned is not more than forty pounds weight, it is not necessary for us to have so strong a sack for the hydrate of lime.

A Sand-Lime Brick Factory for Kentucky.

The Schwarz System Brick Co. have closed a contract to equip a sand-lime brick plant at Owensboro, Ky., with Mr. J. W. McCulloch. It will be a two press plant of their regular pattern, embracing their latest machinery, and will have a daily capacity of 18,000. It is to be in operation on April 1. The Schwarz company is always very careful before sanctioning the locating of a plant to give a thoroughly chemical test to all the materials proposed to be used therein; and in this case Mr. McCulloch forwarded a quantity of the sand for preliminary inspection and analysis to the company's technical department, by which it was pronounced to be of very high quality and fully suited to make a very superior brick. With this definite encouragement Mr. McCulloch decided to undertake the enterprise.

Work on the two plants being erected by the Schwarz Co., near New York, is progressing, and the brick will be on the market early in May.

New York Builders and Sand-Lime Brick.

Sand-lime brick has been slow in making its way into use in New York, and the fact that it has been and is being largely used elsewhere in the country has availed but little against the prejudices or indifference of local consumers. But those interested in that industry have been quietly and steadily pursuing a policy of education, and as a result of such a course Mr. C. J. Curtin states that the American Sand-Lime Brick Co., 39 Cortlandt Street, has several large orders booked for the New York market at very satisfactory prices. He expects the quantity of sand-lime brick used in the metropolitan district this year will be very great, which is directly traceable to a long campaign of scientific and practical experiment and demonstration, which, Mr. Curtin said, took every range and variety of actual trial, that the most practical user could ask for, with the result that some of the largest and most cautious and responsible builders are going to use those bricks largely this year.

The Rochester Composite Brick Co.

This company will begin to build its factory for making sand-lime brick as soon as the weather will permit. The president, Homer Knapp, is a contractor, and the secretary and treasurer is Lawrence Elkus. The company will have the assistance of A. S. Crocker, head of the department of mechanical engineering of the Mechanics' Institute, in installing the plant.

A Convenience for Hollow Block Users.

The Noyes F. Palmer Manufacturing Co., 150 Snediker Avenue, Brooklyn, has got out a chart for architects and builders, which Mr. Palmer calls "the whole problem and the key." It gives a picture of every block they make with the dimensions thereon, and it pictures how the various multiples can be combined to produce any desired effect, both in front wall work and in corner block formation.

The Passaic County Miracle Pressed Stone Co., Paterson, N. J., has been incorporated with a capital of \$25,000.00. The incorporators are: Martin Gable, James H. Wentling, Nicholas E. Warmolts and John J. Ritchie, Paterson, N. J., and Abram Vreeland, Bloomington, N. J., and the office is at Railroad Avenue and Ward Street, and the works also are on Railroad Avenue, 100-102 Paterson, New Jersey.

A Special Cement for Hollow Concrete Block.

This industry, as well as that of artificial stone generally, is growing very rapidly, and they both are very large users of cement. A prominent concrete hollow block manufacturer said in last month's issue, that it was time now that the cement trade took official cognizance of that industry and catered to it by manufacturing a special brand of cement, to be termed Hollow Block Cement, or by some kindred distinguishing name.

Mr. Corbett, of the Alsen's Portland Cement Co., 45 Broadway, who supplies a great deal of cement for just that purpose, said: "I recognize that the hollow block maker needs a reliable cement whereby he can produce exactly the same block every time. The two main requisites are, as I take it, that the cement should be of high grade and thoroughly even, and that it should be well matured. The former can be assured by precision of machinery and care in grinding, and so on, but the latter can only be realized by giving the product time enough to ripen. We send out a great deal of material for this use, which is sixty days cured, which is a necessary minimum, while a longer time would be better yet. We have always received most favorable reports from its use, and I can not conceive of any other qualifications for a special hollow block cement than the two I have above mentioned."

Mr. Corbett reports that the outlook for a good year in domestic cement at remunerative prices is very bright; while the trade in the foreign cement is excellent, no less than 57,000 barrels having been sold through the New York office last month.

Pleased With the Convention.

Mr. Arthur N. Pierson, 1 Park Row, Eastern agent of the Miracle Pressed Stone Co., expressed himself as much pleased with the showing made by the hollow block men at the Indianapolis convention. It was not quite so practical as the subsequent one at Minneapolis, because it was planned on broader lines which opened the door widely to theoretical discussion, whereas the Minneapolis meeting being composed entirely of block-makers was more distinctively practical. But the convention did a good work. It enabled all the theories to be exploited, discussed and sifted out, so that the next meeting may be looked for to be the most practical.

Glens Falls Strike Settled.

About February 10, the difficulties between the Glens Falls Portland Cement Co. and the Burners' union, were settled and 1,400 men who had been idle since last fall, will return to work. The burners and helpers accept a reduction of 25 per cent. and the common laborers go back at the old price. Just previously the company's offer had been rejected, and when this was followed by the formulating of plans to introduce a new kiln system which would reduce the working force of the plant nearly 50 per cent., the burners yielded. A ten months' contract was signed.

A Well-Known Firm Incorporated.

The John Pierce Co., of New York, has been incorporated, with a capital of \$1,250,000.00. The incorporators are: J. R. Pierce, Montclair, N. J.; H. S. Lampher, Glen Ridge, N. J.; and E. Diebtsch, 80 Washington Square, N. Y.

Marble Works Rebuilt.

The plant of the Gouverneur Marble Co., replacing that which was burned on July 24, with a loss of about \$50,000.00 has been completed. The new plant contains all the latest machinery and is one of the most complete of marble mills. The quarry has been operating steadily ever since the fire and a large quantity of stone has been accumulated, ready to be worked up, which will be done very shortly, as the works are fully ready to begin operations.

New Local Agent for the P. M. B. Co.

Mr. C. Crosier, till lately representing the Perry-Matthews-Buskirk Stone Co. in New York, Flatiron Building, has gone out of the stone trade, and he has been succeeded as agent of the company by Mr. George K. Beddoe. Mr. Beddoe has his home in New York and is booked for a permanent resident here. He has made a thorough acquaintance with the trade and has all the capability and local experience and knowledge to thoroughly fit him for the position. Every one whom he has met is glad of his promotion, and wishes him every success.

Grindstones to Fill in the Chinks.

At the Bedford Quarries Co., in the Flatiron Building, February had turned out to be rather a light month after the strenuous times of the preceding months. The outlook was bright, however, for a good year's trade, and in the meantime they had been kept very busy with an unprecedented demand for their well known grindstones, both of the smaller ones for the general trade, and the big 10 and 12 foot ones with which they have fully equipped several large factories.

An Effective Advertisement.

At Ninth Avenue and Thirty-second Street, where the Pennsylvania railroad is excavating for its great station, a solitary structure towers up near Ninth Avenue. It is the house pertaining to a crushing machine which, a notice on the side says, was made by Julian Scholl & Co. There is not a similar sign anywhere around to clash with it, and it carries an undisputed prominence, heightened by the isolation of the building.

A State Stone Crushing Plant.

The New York State engineer and superintendent of prisons has sent in a report on the advisability of establishing a stone crushing plant near Sing Sing prison. The cost would be \$150,000.00, and it would be on the west shore of the Hudson, north of the Palisades, on a plot which covers thirty acres, with an estimated supply of 30,000,000 cubic feet of rock, and where, with 150 men working eight hours a day, it is estimated 800 cubic yards of crushed rock a day would be turned out.

Comes from Ireland to Inspect Our Stone Trade.

This office was honored by a visit about the middle of February from Mr. E. St. John Lyburn, a mining engineer, who came direct from Dublin, being sent by the Government to inform himself as to the methods of quarrying and stone working, and the various stone tools and machines of America. The object of the government is to disseminate amongst the people of Ireland the information gathered by Mr. Lyburn, and encourage them to make a commodity of all the good rock which is in the country, and which can be profitably worked up, or, in fine, to create a new industry for the Green Isle. Mr. Lyburn has laid out a very thorough route for himself, from the Eastern and New England section up to Canada, and then through the Northwestern States out to Colorado, and then back through the middle Western States, finishing with a thorough inspection of the quarries on the line of the Hudson and in New York State and vicinity.

He has devoted several months to the trip, and to fortify himself with a fore-knowledge of the localities he is to visit, he has taken a file of Rock Products, as complete as could be made, which he will read up thoroughly.

As his report will be taken up and officially put before the whole country by the government, it is a good opportunity for the American makers of stone and quarrying machinery, to make known their goods, and to this end Mr. Lyburn is desirous of receiving catalogues and circulars from all such manufacturers, and which should be sent to him at the Hotel Belleclaire, 77th Street and Broadway, New York City.

Good Outlook for Wire Cables.

Mr. Moon, of the Macomber-Whyte-Moon Wire Rope Co., 135 Worth Street, has just returned from a tour through New England quarrying districts, and reports the outlook for business to be very good if labor troubles do not interfere. It was Mr. Moon's company which furnished the wire cables that helped to make a success of the big job of hoisting and setting the big 40-ton section of the light granite pillars of St. John's Cathedral on Morningside Heights.

Will Go Into His New Quarters.

Mr. Willard F. Meyers, circular diamond saws, Vernon Avenue and Fourteenth Street, L. I. City, has moved into his new shop which is but a stone's throw from the old one. It is a two and a half story brick building, with a floor space of 25x100. The engine is now running and some of the smaller machines, the drills and so on, are now working. Mr. Meyers will retain his old shop and between the two he hopes to have enough room to accommodate, for a while at least, his trade which is rapidly increasing, and had long ago outgrown his pleasant quarters and facilities.

The Massachusetts Monumental Co. has under way an enclosure of rails and posts of bronze, with a granite entrance, to be erected as soon as the weather conditions will permit. It will be placed at Howletts, L. I., for J. Henry Harper, of the well known publishing house of Harper Bros. Mr. Leaman has a marker in his office with inscriptions cut in all the styles—sunk, V sunk, U sunk, both plain and polished, half raised square and rounded, and all the prevailing styles of lettering, so that a customer can see exactly what a certain style will look like. It is popular with his patrons and helps them to an understanding of what is proposed a great deal better than verbal explanations.

New York Sculptor's Plans Win.

Albert Randolph Ross, of this city, has received the award from the committee in Philadelphia, for a memorial to be erected on the battlefield of Vicksburg, to the 45th, 50th, 51st and 100th regiments, Pennsylvania volunteers and Durell's Battery of Light Artillery. The New York trade will undoubtedly have a chance to figure on it.

Toot! Toot!!

In the present issue of ROCK PRODUCTS there appears a full page advertisement of the Ingersoll-Sergeant Drill Co., which was first choice as an advertising contest recently conducted by the Publication Department of that company. It is needless to say that this selection by a company who are such extensive and discriminating advertisers, is very flattering to this paper.

For Use on the Hudson River Tunnels.

The Ingersoll-Sergeant Drill Co. has received the contract for the compressed air power plant for second pair of trolley tunnels under the Hudson. The order is for five duplex air compressors. Three are low pressure class "H" with a maximum air pressure of 50 pounds per square inch, with a capacity of 1850 cubic feet of free air per minute each. The two others are class "H C" for high pressure, with maximum pressure of 125 pounds per square inch and a combined capacity of 2,000 cubic feet per minute. This makes 38 Ingersoll-Sergeant Air Compressors with a total capacity of 117,234 cubic feet of free air per minute now used on the tunnels under the Hudson and the East Rivers.

The company, has issued a leaflet, or a small vest pocket catalogue of their air compressors from Class "A" to "J" inclusive, with an illustration and some descriptive matter of each, with a list of the other products supplied by this company. It also contains addresses of all their sales offices and title and number of all their various catalogues with brief indication of the contents of each.

A Big "Cave-in" Did Not Hurt It

Some short time ago the Rand Drill Co., 128 Broadway, New York, received a letter from the Edwards Slate Co., Granville, N. Y., ordering another drill to replace one which was buried under a big "cave in." A photograph of the scene showed an enormous mass of rock and debris, making a hill of good size. They have just received another letter from them saying: "We have now dug out that drill, and have tried it and it is now running as good as new."

Large Increase in Use of Pneumatic Tools.

Mr. H. G. Kotten, 120 Liberty Street, said that the use of pneumatic stone working tools had increased immensely in every section of the country, and his orders for January and February of this year were double those for the same months in 1904, and those latter two months were looked on at that time as being remarkable and unprecedented.

A Good Handy Drill for Many Occasions.

Very few quarrymen know what an effective drill there is for special work in some odd corner, hard to be reached by the ordinary large machine. There is such a tool, the Jackson Hand Power Drill, made by H. D. Crippen, 25 Broad Street, of date of January 30. Mr. Crippen has a letter from S. Somerud at Hot Springs, S. D., saying: "Your drill is working constantly from the time of its purchase at the present time; the cost of repairs has been slight and it will do double the work of hammer and bit in either hard or soft rock."

Good Outlook for Quarry Pumps.

The Pulsometer Steam Pump Co., 1708 Whitehall Building, New York, reports the prospect for trade in pumps to be very good for this spring, and judging by the inquiries now coming in the demand in the quarry line will be unusually good. This tallies with what all the dealers in quarry and stone working goods prophecy for the coming season.

Pushing His New Gang Saw.

Mr. O. W. Alston, of the Alston Stone Machine Co., 10 E. 23rd Street, New York, is doing New England in a sled, his last reports coming from Great Barrington, Mass. He says that the stone trade is very ready to look into anything new, and the outlook is very encouraging. The company will soon have ready for distribution their new catalogue, giving full information, with clear views of the machine, showing the automatic feed system, and the conchoidal driving mechanism of the steel sector gang, and the parallel motion attachment for gang saws.

BOSTON, MASS.

BOSTON, MASS., February 10.—One of the most important things in connection with the stone trade at the Boston end of this industry this month had its inception with the Harrison Supply Co., at India Wharf, where Nathan C. Harrison, one of the men most widely known to the stone trade, is preparing to put upon the market a preparation that is bound to fill an important place in the granite polishing world. This preparation is something new and is called Alundum. Mr. Harrison has had a polisher out in Quincy for several months giving it a practical demonstration, and he is, after due trial, perfectly satisfied of its practicability. He will be able to sell it for about 8 cents a pound. The Quincy firms are already using it, and it will be introduced to all granite sections at once. The product is manufactured for the Harrison Supply Co. by the Norton Emery Wheel Co. The firm has just closed a contract with William H. Pitkin, of Barre, Vt., to handle all their Vermont business and have just put an additional salesman on the road. He is R. A. Fairbairn, and his territory will be all parts of the United States.

The American Slate Co. has recently changed its location to a splendid office in the finest office building in Boston, the new Board of Trade building on Broad Street. Mr. W. H. Cummings was feeling very happy about the outlook for the spring. At present the company is doing a large jobbing business in all grades of slate, not only that used for electrical purposes, but also the grades used for interior work. They find a rapidly increasing market for this, as well as roofing and blackboard slate. They ship the product to all parts of the United States. They have recently finished a contract at the new hospital building at Augusta, Me., in which 3,700 lineal feet of slate base of the unfading green was used in the interior furnishings. Mr. Cummings and his associates have recently formed a separate corporation known as the American Brownville Slate Co.

The corporation is organized under the laws of the State of Maine with a capital stock of \$250,000.00, divided into 250,000 shares, at a par value of \$1.00 each. They are offering the first allotment of stock (\$60,000.00) at 60 cents. The company owns over one and one-third miles long and 200 feet wide of the Brownville slate vein for which the market demand has always exceeded the supply. E. A. Bullard, the manager of the American Slate Co., is the manager of the corporation. Mr. Bullard has spent his life in the slate industry and is thoroughly familiar with this vein of slate as well as with the entire slate industry of the country. His associates are Willard H. Cummings, treasurer of the American Slate Co., and George E. Perkins, chemist and metallurgist, of Providence, R. I.

Out in Cambridgeport Walter W. Field makes hoisting engines, and when I called upon him recently found that he was just shipping a 50 h. p. hoisting engine with three dandem drums for Holbrook, Cabot & Rollins, of Boston.

The Rawson-Morrison Manufacturing Co., of Cambridgeport, are always busy supplying the demand for machinery used by the stone men, and in building cable ways for the cement people. Their new catalogue will be out in a few days and every man in the stone business, from granite to soapstone, ought to get a copy. They not only build machinery for the hard stone trade, but for the soft stone business as well.

Lombard & Co., of A Street, are putting out a grindstone that takes pretty well with the granite men. I was unable to see Mr. Magill, the manager, this month, but I know from the other end of the story that they are placing a good many grindstones among the granite men.

J. R. Beatty is the manager of the Fairbanks Co., whose big store is located at 38 Pearl Street. They deal in all sorts of quarry supplies. Among the many big contracts that they handle in New England may be mentioned the fact that the company has just completed the contract of equipping the big High Island granite quarries of Wm. Gray & Sons, at High Island, Maine. They put in all the steam fittings, piping, steam valves and all the other supplies. The Fairbanks Co. would be glad to meet any of the quarry owners of New England wherever they happen to be looking for quarry supplies.

Hawkrigge Bros. are located at 303 Congress Street, and are noted for the Hawk brand steel, which they sell to the granite trade. They have just gotten out a new catalogue of very comprehensive form.

SYRACUSE, NEW YORK.

SYRACUSE, N. Y., February 22.—The year starts in well with the prospect of a large amount of building. The record of last year which was larger than in other years in the history of the city, will probably be surpassed. Among the buildings that will be erected this year are a Y. M. C. A. building to cost over \$800,000.00, a new steel mill, several factory buildings, 100 houses at East Syracuse and many other structures. The Hudson Realty Co., of this city, which owns a large tract of land in New York City, has engaged Fred J. Grassman, of this city, to superintend the erection of 100 houses and apartment houses on its property and the work will commence at once.

The winter has been a good one for cement, although the prices have been low. At the present time \$1.35 a barrel is what is asked, but it is going up rapidly and before long it is expected that it will be where there will be some profit. The local brick yards and stone quarries report a prosperous winter and were able to dispose of the stock which they had on hand.

The deal by which the Thomas Millen Portland Cement Co. secures the extensive milling property of the Dunlops at Jamesville, a few miles from Syracuse, was closed February 15. Several hundred acres of land come into the possession of the company with immense gypsum quarries and water power. The property was valued at about \$175,000.00. The Millen company will erect several mills and a large number of kilns. The property extends from the head of the Orville feeder on the north to the village of Jamesville and east and west of Butternut Creek for varying distances. A small strip of the land has been deeded to the Syracuse and Surburban Railroad Co. in order that the course of the road may be slightly changed so as not to run so close to the mill. The deal has been a long time in being consummated as it took a long time to set the searches of all the property. Thomas Millen, of this city, is president, and W. H. Wiltzie, secretary of the company.

The recent death of Alfred A. Howlett removes one of the pioneers of this section and a man who was actively identified in the building up of Central New York. Mr. Howlett was 84 years old and was the son of Parley Howlett, one of the original salt manufacturers of this section. He was the first man to ship salt into the West which soon became an important market. He conveyed it by boats down the Seneca and Oswego Rivers to Oswego, then over the Great Lakes, drawing it by horses around Niagara Falls. He was the first president of the Syracuse & Chenango Valley Railroad. At the time of his death Mr. Howlett was president and one of the chief owners of the New York Brick and Paving Co., one of the largest manufacturers of paving brick in the state. This concern is located in this city. He was also vice president of the Syracuse Solar Salt Co.

The buildings of the Gouverneur Marble Co., which were destroyed by fire at a loss of \$50,000.00, have been replaced and operations have started again. It took five months to erect the buildings. The new plant contains all the latest machinery and is one of the most complete marble mills in the country. Since the fire the quarry has been operated all the time and there is a large quantity of stone waiting to be sawed. There are enough orders on the books to keep the plant running day and night, about forty workmen being employed.

The Rylstone Co., the youngest marble industry at Gouverneur, has commenced work on an order for stone to be used in a \$100,000.00 church to be erected at Glens Falls. The company decided to have the work done at Gouverneur rather than to ship the unfinished stone to some other point.

The St. Lawrence Marble Co., of Gouverneur, since it passed into the hands of David Hyman, of Rochester, has showed renewed activity. Three gangs of saws, which were idle for years under the old management, have started up and a large force of men are engaged in removing the cap rock from the new extension. As early as possible in the spring, it is expected, the entire sixteen gangs of saws will be operated and the output will be greatly increased. The marble men all expect a good season.

A large number of tale concerns on the Gouverneur and Oswegatchie branch of the New York Central railroad were unable to make shipments on account of the recent storms which tied up the roads.

The personal property at the works of the Admant Plaster Co.'s works in the eastern part of

the city, consisting of a quantity of stock in raw form and a quantity in various stages of manufacture, was sold in bankruptcy proceedings to Levi S. Chapman for \$2,173.00. There was spirited bidding. The company was one of the heaviest debtors of the American Exchange National Bank which failed. The proceedings with the Adamant and other companies resulted in the arrest of the president of the bank, Manning C. Palmer, on a charge of mismanagement.

The Halcomb Steel Co. will build a plant near the New York State Fair grounds in this city. It is expected that 600 men will be employed. The best grade of crucible steel will be made.

While a gang of quarrymen at the quarries of the Adams & Duford Co., at Chaumont, were engaged in removing a mass of frozen earth which hung over the ledge where they were working, the mass broke apart and nearly killed one of the workmen.

The second mortgage on the plant of the Adamant Wall Plaster Co. was sold in bankruptcy proceedings to Levi S. Chapman for \$9,000.00. The face of the mortgage was \$18,000.00.

Michael Mora employed at the Thomas Stone quarry near Waterloo, N. Y., was burned to death in a small house which he occupied. He was one of the bosses of the quarry.

The Onondaga Litholite Co. has secured a building permit to erect a 30x40 ft. addition to its new plant in Tracy Street. The company has so many orders ahead that that action was made necessary. The addition is for the mixing department. One of the jobs the company is working on now is the manufacturing plant for the G. C. Hanford Manufacturing Co. At the annual meeting of the company the following officers were elected: President, Charles A. Lockard; vice president, J. Orville Nye; secretary, E. J. Page; treasurer, Henry P. Warner; manager, Joseph M. Hill.

The Onondaga Pressed Block Co. is another artificial stone concern that is doing a large business. Although it only recently started it has a large number of orders on hand.

C. C. Moore, who held a responsible position with the United States Talc Co., at Gouverneur, has resigned and entered the employ of the H. H. Franklin Co., of this city.

At the annual meeting of the Western Coarse Salt Co., of this city, the following officers were elected: Trustees, Lee Richmond, P. J. Johnson, W. J. Hopkins, Denison Richmond, A. G. Comstock; president, Lee Richmond; secretary-treasurer, P. J. Johnson.

The following officers were elected at the annual meeting of the Union Coarse Salt Co., of this city: Trustees, Lee Richmond, P. J. Johnson, W. J. Hopkins, W. R. Hair, G. V. Cahill; president, Lee Richmond; secretary-treasurer, P. J. Johnson.

The Onondaga Pottery Co. is working on a large order of dishes to be used in the cafe run in connection with the House of Representatives at Washington. The design is patriotic. The dishes contain a representation of the capitol building, and red, white and blue enter into the design.

The certificate of the Canal Quarry Co., which will crush stone, has been filed. The capital is \$60,000.00. The incorporators are: Morris A. Phelps, Edward F. Shea and William E. Webster.

The Pleasant Brook Cemetery Association, of Smyrna, N. Y., has been incorporated with a capital of \$1,600.00. The incorporators are: Solon Humphrey, George F. McCoy and Lynn Lyon, of Bonney; Alva Lynn, of Lebanon and Charles H. Tuttle, of Heperville.

The Rome Iron mills at Rome, N. Y., which were burned down early this month will be rebuilt. The entire mill was destroyed at a loss of \$200,000.00.

The Little Falls Stone Co. has been formed at Little Falls with a capital of \$25,000.00. John Hudley is one of the backers.

In the paving fight at Cortland, N. Y., asphalt won out over brick and most of the contracts were awarded to the Barber Asphalt Co., of Utica. The promoters of bitulithic pavement made a strong fight but were defeated.

The Evans Marble Co. has the marble contract in the new court house which is being built in that city.

The National Web Tile Sewer Co. has elected the following officers: President, William K. Niver; vice president and general manager, R. R. Stuart; secretary and treasurer, J. Frank Plumb.

The plant of the Onondaga Vitified Brick Co., at Warners, will start up about April 1 after an idleness of several months, during which time extensive improvements have been made.

CHICAGO, ILL.

CHICAGO, ILL., February 27.—The month now ending has been a severe and trying one for all those engaged in the material trades. Severe cold weather has prevailed almost continuously since the middle of January. The snow falls have been frequent, making traffic heavy. Many lime kilns shut down entirely, not only here but in Wisconsin; quarries and gravel pits were obliged to suspend operations on account of snowdrifts filling them up and stopping all work. But just now there is a rift in the winter clouds and the weather has most graciously tempered in its severity, and abundant signs are apparent that winter is at an end, and preparations are all made for an active and speedy resumption of work all along the lines of many great building enterprises. But even during all the continuance of the severe weather a vast amount of foundation work has been pushed ahead. And this work too, has been the laying of solid concrete foundation for several lofty skyscrapers to be erected in the downtown district, under buildings still standing, and which business is still conducted as usual, and which give no external evidence that any work of universal importance is going on beneath surface of the ground on which they stand. These concrete caissons, sunk to depths varying from 50 to 70 feet, are now ready to receive the superstructure, and within a very short time the work of demolition will commence on many buildings like that of a portion of Marshall Field's great store, the Boston Store, and others, to raise up skyscrapers costing from \$1,000,000.00 to \$2,000,000.00 each.

It has been a long period of time (as time goes) since the building trades in this city has had held out to them such an inviting prospect of genuine building activity as is now presented. No wonder there is cheerfulness everywhere in building circles, and contractors are all exceedingly snave and happy over the present outlook. Eighty-three structures now under way will cost \$24,156,000.00. Seventeen office and mercantile buildings are intended and their cost is approximated at \$10,320,000.00. About 38 new school buildings, at a total cost of more than \$5,000,000.00; warehouses and factories, fourteen, \$4,055,000.00; apartments and hotels, seventeen, \$1,855,000.00; churches, clubs and libraries, eleven, \$1,390,000.00; hospitals, four, \$900,000.00, are all among the most noticeable. Among the most notable structures also, the Illinois Life Insurance Co. is to commence the erection of a \$2,500,000.00 building on La Salle Street, twenty stories; and the commercial National Bank is planning the erection at the northeast corner of Clark and Adams Streets. The largest office building in the city with the single exception of the First National Building. The present outlook here for an active building season, as your readers can see, is first-class. Financial conditions are altogether favorable at this time for large outlays. Money continues to accumulate in Chicago in the greatest volume in the history of local banking. Increases in deposits are general, while rates remain at a low figure. Mr. James H. Eckels, president of the Commercial National Bank, says his bank never had so much money in the bank as now. "It is the same in the West and Northwest. Some Kansas City bankers were in here to-day trying to find an avenue for the employment of their surplus money." Considering the easy condition of the money market it is little wonder that the building market is active.

No Serious Labor Troubles in Prospect.

"There does not seem to be at this time any serious labor troubles ahead to interfere with material trade operations. A long step towards peace in the building industry for the coming year was taken on February 23," says Mr. Grey of the Illinois Brick Co., "when contractors and bricklayers adjusted their differences and signed agreements until March 1, 1906. The deadlock between the employers and the men was broken, when the former offered to give the masons a half holiday on Saturday during nine months of the year. The bricklayers will receive 60 and 62½ cents an hour, the wage scale in effect last year. The only obstacle now in the way of peace in all the building trades is the Carpenter's District Council, and it is thought that all troubles in sight will be eliminated this week."

The Illinois Brick Co., through its president, George C. Prussing, has just announced the new plan for recapitalizing that concern. There will be a reduction of the number of outstanding shares of preferred stock, so that there will remain for conversion into new capital stock the exact amount

required to make up 40,000 shares. The yards, which practically comprise the entire brick business in this city, have been shut for some time now, but it is likely now that severe weather is over, the fires will soon be lit and active work resumed. The demand for brick is likely to be very large the coming season, and firm prices will be the rule. \$7.50 to \$8.00 per thousand—upper price 10 per cent. off for practically a cash payment.

Illinois Athletic Club Contract.

The Thompson-Starrett Co., contractors, with offices in the Railway Exchange Building, have just been awarded the construction of the new Illinois Athletic clubhouse on Michigan Avenue. The work began on February 25. The building is to cost \$500,000.00 and will be constructed without necessity of putting a mortgage on it. It will be one of the finest edifices of the kind ever built in the West.

Large Crushed Stone Concern.

The Dolese & Sheppard Co., 184 LaSalle Street, have recently bought out the Gary Stone Co., at Gary, Ill. This is an important move on the part of this well known firm, long engaged in the business of handling building material. They will proceed at once to enlarge the plant, and will erect one of the largest crushed stone plants in the country, so that it will have a capacity for turning out at least 1,000 cubic yards of crushed stone a day. They now own at Gary a tract of land filled with stone quarries covering 175 acres, the entire cost of which will be about \$100,000.00. This plant will give this well known firm almost unrivalled facilities for supplying crushed stone to their patrons and enable them to fill their public contracts with the utmost dispatch. The firm is one of the largest dealers in crushed stone in this city.

Lime Company Merger.

The Chicago Union Lime Co. has been merged into the Builders' Material Co., and the new concern has taken ample rooms on the sixth floor of the Chamber of Commerce building, Washington and LaSalle Streets. Mr. Frank Robinson is the general manager. Mr. Robinson is an experienced man in the business, and says the outlook for a grand business this year could not be better.

The lime market is quiet at this time. Outside receipts, mostly from Wisconsin, have been shut out on account of the cold weather.

The Stearns Lime and Stone Co., 165 Randolph Street, report trade quiet at this time, but look for a rush of business a little later on, both in lime and crushed stone. Prices are quoted at 60 to 65 cents per barrel for lime. The company turns out fresh lime in season every four hours. Their kilns give out a furious heat equal, almost, to any blast furnace.

Condition of Cement.

The cement trade, owing to weather conditions, remains practically inert. Quotations at present are nominal. Dealers, one and all, speak with greatest confidence of the prospects as soon as the season opens. March is always a blustering month here, but when April sets in there will be something doing.

The paving contracts just awarded by the Board of Improvements sums up a total of \$214,000.00. The awards are to the Barber Co., for asphalt, \$77,483.00; to Farr Bros. Co., \$26,635.00, granite macadam. The most important improvement is the improvement of Canalport Avenue to Halsted Street, at a cost of \$42,268.00, to be paved with granite macadam.

Sand-Lime Brick Prospects.

The American Sand-Lime Brick Co., 1307 Great Northern Building, is full of business, and new plants are going up every month in various parts of the country. The company is exceedingly well pleased over present prospects and expect to largely increase their business over that of any previous year. They are meeting with every encouragement in all parts of the country and particularly in the South and East, wherever good sand and lime is handy.

Buyers Visiting Chicago.

William & Doctor, of Spence Bros., Cleveland, O., were in town last week, purchasing a No. 3 crusher with elevators, screen, etc., for increasing their crushing plant at Belleview, Ohio. They already have a Gates No. 6 at that point and have orders for so much stone for the coming season that they were obliged to increase their capacity to 800 to 1,000 cubic yards per day. Mr. William Spence has had quite a serious illness but is completely

recovered, excepting that he is a little thin compared with his former vigorous appearance. Spence Bros. are among the most popular and reliable stone contractors in Northern Ohio, and have a very large business in both contracting and crushed stone work.

The Illinois Stone Co., of this city, have recently contracted for a large crushed stone plant for their quarries at Lamont. They have heretofore confined themselves entirely to building stone and rubble, but are now going into the crushed stone business on a large scale.

Robert L. Pate, of Farmington, Mo., was in the city last week buying a crushing plant for his granite quarries near Knob Lick, Mo. He purchased a No. 4 Gates crushing plant of the Contractors' Supply and Equipment Co., shipping his product to St. Louis market.

John O'Laughlin, of the O'Laughlin Stone Co., has just purchased a large crusher which will increase his crushing capacity at his Racine quarries by 25 to 30 per cent. Reports business very good.

Wm. Elchel, of Evansville, Ind., president of the Elchel Stone Co., with plants at Milltown, Ind., was in the city looking up some new equipment for his quarries. Reports the outlook for this season unusually good.

Mr. Haskins, of Haskins & Ramsey, Topeka, Kansas, was also in Chicago last week in quest of new machinery.

Mr. Haskins is an unusually successful crushed stone man and reports an increasing business for this year. He has a very large plant now but is still adding to it, and apparently intends to continue.

The Contractors' Supply and Equipment Co. have removed their offices from the fourteenth floor in the Old Colony Building to spacious rooms on the fifth floor. Business with them is looking up and prospects are exceedingly flattering. There is a good demand for machinery by parties owning quarries to turn out crushed stone, and also for Smith's cement mixer. Mr. Geo. C. Marsh, president of the company, says business prospects were never better.

Mr. Wood, Chicago representative of the Wolverine Portland Cement Co., says things are very quiet.

Mr. W. McMillan, of the firm of W. McMillan & Son, 315 Chamber of Commerce, has been absent from Chicago. Mr. McMillan has put in his time during the dull season in travelling through the East, and is expected to return to his desk about March 1.

Mr. W. A. Humphrey's manager, N. A. Williams Co., has gone to California to spend his winter vacation, and will not return to Chicago until about March 15.

Mr. Wright, of Meacham & Wright, dealers in cement, has gone South for a few weeks, to build up. Mr. Wright contracted a severe cold some weeks ago, and inasmuch as business is generally quiet at present time, he concluded a trip to the South would do him no harm.

Thos. Moulding Co., Chamber of Commerce, Chicago, state their business in the fire brick line is good, but in cement and pressed brick it is a little quiet owing to the weather conditions.

Mr. Malone, of the Portage Entry Quarries Co., Chamber of Commerce Building, is spending his winter vacation in the South, and is expected to return to Chicago shortly.

ST. LOUIS, MO.

St. Louis, Mo., February 28.—The prospective activity in building operations continues to be as great as ever though, in spite of the fine weather, it still seems to remain in the prospective stage. The architects and real estate dealers are busy enough and records are being made in the real estate transfers and building permits. The first two days of this week all records for two consecutive days were broken in the building commissioner's office by the issuance of 83 permits, all of them, with scarcely an exception, being for dwellings, flats and stores, with the probability of a continuance at about the same rate.

That actual building operations are still rather in the prospective stage is said to be due to the fact that the unions show no signs of being less exacting and obstructive. Although the carpenters have been notified that the price will be 45 cents instead of 55 cents per hour, it is by no means certain that the lower price will prevail, it is safe to say that there will be a struggle first.

The plumbers are not satisfied with their \$5.00 per day, and although they appear to be resting in demands for advances they are still working in other and less direct ways. The union has recently decided, or has given notice of its intention, to forbid the use of threaded nipples on a job.

Unfortunately the plumbers' supply houses too often work in collusion with the union so that if a man wanted a dime's worth of solder to mend a hole in his coffee pot his money will be refused because he does not belong to the union. This happened to me. Some time ago a law was passed making it illegal, as in restraint of trade, to refuse to supply a man's wants because he was not a member of a union. It looked for a time as if this would work all right, but laws appear to be made to be laughed at. The supply houses, to please the union, soon got around this; for instance, some time ago I wanted a kitchen sink and went to one of these houses, when I was told that sinks were sold in lots of six and a package would not be broken. No one would be so simple as to believe that. If I had been a plumber "in good standing" I could doubtless have been supplied with "a half dozen kitchen sinks," the rest perhaps placed to my account, or some such subterfuge.

Plasterers are still holding on to their \$6.00 per day and are also restricting work in various ingenious ways so that contractors say the plasterers do less now at \$6.00 than they used to do at \$4.50 per day.

The bricklayers appear to be acting in the most sensible and straightforward manner. They are getting 65 cents an hour, but they do not seem to be scheming obstructions all the time and will take work from helpers of any kind so long as they are competent, without any restriction as to color or union.

Cement construction is receiving a larger share of attention than ever. This is due to the great increase in the output within the last two or three years of American made Portland cement, and to the excellent quality which our mills are producing. The increased output has of course brought down the price to a remarkably low figure, with the result that concrete block construction has quite a boom. The important contracting concern, the Fruin-Bambrick Construction Co., of this city, has taken hold of this work and is manufacturing the two-piece interlocking concrete block, patented by the American Hydraulic Stone Co., of Denver, Colo. This is a block in which two pieces are required, one cemented to the other, to make a complete block with a hollow space in it.

Notwithstanding the low prices, or perhaps in consequence of them, the cement men are doing good business, perhaps it would be more accurate to say they are doing a considerable business and there is a heavy demand for the high grade Portland cements, such as "Red Ring," "Atlas" and others.

The lime men are in excellent humor, they might even be described as jubilant. Lime is in demand and some new kilns are about to be built to supply it. The New Union Sand Co., whose offices are in the Holland Building, will put up an entirely new plant on the St. Louis, Memphis and Southeastern railway, about twenty-two miles south of this city, near Kimmswick. Five kilns will be built and two or three of them will be running by April 15. With such a company as the Union Sand and Mr. Block at the head, there is no doubt that a considerable quantity of good quality of lime will be offered. The Colorado Lime Co. is again talking about increasing the number of its kilns. It looks as if this will perhaps be done soon. The Goetz Lime and Cement Co. is working steadily along, enjoying the advantages of its recent improvements.

Marble men seem to be satisfied. The Bradbury Marble Co. says that business is good and that prospects are excellent, both for their marble and new granite department. The monument men ought to be doing well, if it is only from the ravages that a gripe has been making. Your scribe was thinking of a monument on his own account, having to do his work with the clinical thermometer marking 102 degrees. It may not be a dangerous temperature but it is mighty uncomfortable.

LOUISVILLE, KY.

LOUISVILLE, Ky., February 28.—With the advent of more favorable weather the builders and supply men have awakened to the fact that they must prepare for an active season. If the preparations now going on are any indication the coming

months will witness an unusual rush in building operations. During the past week the weather has been quite pleasant and has given the various industries a very favorable outlook.

Many new streets, of brick and asphalt, principally, will be laid by local contractors. The improvements in this respect are said to be quite extensive. The architects' offices are all full of plans for new buildings, and it looks as if Louisville is to have a very busy year.

Concrete work will be one branch of the rock products industries that promises well, and considerable figuring on work of this character gives promise of future business.

The National Concrete and Construction Co. report that they are now giving estimates on an unusual amount of concrete work. They are making preparations for a very busy season.

Fitch, Troxell & Co. are to construct many squares of concrete sidewalks. They have been practically tied up during the past several months, but are now taking orders for more work than ever before. They expect a prosperous year.

The Falls City Artificial Stone Co. are just finishing up some of last year's orders, but are looking forward to a good season. They have plans under way for considerable concrete block work.

The Southern Roofing and Paving Co. say business is brightening. They have a contract for a concrete grain elevator at Hodgenville, Ky. Work on this will be started just as soon as the weather will permit. The general outlook is very favorable for both concrete and roofing work.

The National Roofing and Supply Co. are busy now. Mr. Turpin said the people were taking advantage of the fine weather and orders were coming in rapidly. He felt that they would do a larger business this year than ever before in the roofing line.

Samuel F. Troxell & Co., reported that while the roofing business had suffered considerably from the severe weather the outlook was very promising for an active season. Orders were coming in now and they were satisfied of considerable activity.

The Kentucky Wall Plaster Co. was taking on its old rush. Mr. John Campbell said that they were now making up for lost time. Both of their plants were busy with orders.

The Peter-Burghard Stone Co. were not rushed, but Mr. Burghard said things were brightening since the favorable turn in weather conditions. He looked for a nice business and was preparing for its reception.

John Diebold & Sons have almost completed the extensive improvements in their stone plant. They were just turning out some stone columns for a large out-of-town order and had other work of importance. Mr. Andrew Diebold said they were now in a position to take care of orders of any magnitude.

The Peter-Melcher Steam Stone Works are making preparations for an active season. They are not very busy in the building department, but had sold a number of fine monuments lately and expected a good business as the season opens.

J. B. Speed & Co. reported that the cement and lime industry had been quite dull. The indications were better now, however, and the year gave promise of being an active one in both lines. They had nothing of particular mention for publication.

The Western Cement Co. were not working overtime. The severe winter had made business suffer, but they were glad to say that the outlook was even better than for some time. The use of cement in such large quantities was a good omen for them.

W. F. Nugent & Bros. say the weather has so tied them up that they have hardly recovered. The outlook is very fine now, however, and they anticipate a good business in river sand and gravel.

The Ohio River Sand Co. said they were getting in shape for a big season. The ice in the river was rapidly disappearing and this was a most favorable sign for their business. Sand and gravel would be largely used this year.

Scott Newman said the sand business had a brighter outlook now. He looked forward to an active business and was satisfied he would not be disappointed.

The Louisville Fire Brick Works at Highland Park, Ky., report that they are still behind their orders. Mr. K. B. Grahm is out of the city on a business trip. The future of this organization is most flattering.

MEMPHIS AND THE SOUTHWEST.

MEMPHIS, TENN., February 25.—The improved weather conditions in the Memphis district lends encouragement to the jobbers and manufacturers in building trade supplies. The city and town business of spring will soon be opening up, though in lowland districts, railroad, municipal and county work that utilizes concrete, etc., will be backward for some time. The various concerns in roofing, paving, concrete and material lines are generally quite busy at this season, furnishing prices on future work and closing contracts for future delivery, so to speak.

ARKANSAS AND THE TERRITORIES.

The asphalt pavement of ten blocks on Third Street, conducted by the Arkansas Rock Asphalt Co., of Little Rock, has been completed. The material came from Pike County, Ark., and is said to be very fine. The company is composed almost wholly of home people.

Sherman Shvetser will put in a cement block machine at Pond Creek, O. T., about March 1.

The Kansas City, Portland Cement Co., with its principal place of business at Guthrie, Oklahoma, with a capital stock of \$250,000.00, has been incorporated by James A. O'Shee, Patrick L. O'Shee and Michael Cassidy, of Guthrie; W. H. Gaffney, Geo. W. Evans, L. R. Miner, T. W. Miller, F. C. Vincent and J. W. Williamson, all of Kansas City.

The Tulsa Cement Stone Manufacturing Co., of Tulsa, I. T., has filed articles of incorporation. The company will engage in the manufacture and production of cement, lime, plaster, artificial stone, sewer pipe, etc. The capital stock is \$27,000.00.

The Downard Paving and Construction Co. has been organized at Ardmore, I. T., with a capital stock of \$10,000.00, with A. J. Toulon, president and general manager; Sidney Suggs, vice president; J. S. Downard, secretary; and Lee Cruce, treasurer. The board of directors are: A. J. Toulon, Sidney Suggs and J. S. Downard.

Capt. Lawrence Comerford, of Little Rock, Ark., is organizing a concern at Pine Bluff, Ark., for the manufacture of sand-lime brick.

The American Asphalt Co., of Oklahoma City, O. T., has been incorporated with a capital stock of \$25,000.00, by Alex T. Hamilton, E. A. Mellling, E. L. Ralls, W. O. Richards, E. L. Penrudocke, E. S. Ferguson and Andrew J. Carlisle, all of Oklahoma City; Harper Hamilton, of Rome, Ga.; A. D. Bellamy, of Florence, Ala.; C. W. Brown, of Comanche, I. T.; Stephen Brown, of Rush Springs, I. T.

Josh Brock, of Stillwater, O. T., contemplates the erection of a brick plant at Cleveland, O. T.

KANSAS.

A. I. Schowater and J. S. Eymann, of Newton, Kan., are contemplating putting in a plant for the manufacture of cement blocks to be used for building purposes.

James Cavanaugh, of Lyons, Kan., has commenced running his cement block factory and is turning out blocks as fast as he can secure material.

George Harris, who is connected with the oil business in Paola, Kan., will soon begin the manufacture of cement brick. He has a machine with a capacity of 8,000 bricks a day.

H. Oldson has made arrangements to establish and operate a cement stone factory at Kiowa, Kan.

At Smith Center, Kan., the promoters of the local cement works, have perfected an organization for this year and elected the following officers: Henry Williams, president; J. H. Detwiler, vice president; H. C. Smith, secretary and treasurer. The managers are: John Moorman and E. V. Osborne. The incorporation will be known as the Smith Center Construction Co., and they will make a specialty of paving work, etc.

S. W. Wood, of Plainville, will erect a cement stone machine at Stocktown, Kan., and operate the same. The machine was purchased from the Hercules Cement Stone Machine Co., of Rochester, N. Y. They will get out sidewalk material, etc.

TEXAS.

The Hydraulic Stone Co., of Ft. Worth, Texas, has been incorporated with a capital stock of \$15,000.00, to manufacture and deal in builders' material. The company was incorporated by T. W. Slack, R. H. McNatt, J. E. Bomar, E. B. Harold and Jake F. Burn. Mr. Slack is cashier of the First National Bank. He states that the company will engage in the manufacture of the hollow system building blocks, which are impervious to both

heat and cold. The material, he says, is largely manufactured in the north, but the local company will be the first to introduce the industry in the Southwest. Work upon the plant of the company will begin at once, following the choice of a site.

There is a new manufacturing enterprise for Dallas, Texas, in the Southern Plastic Co. The company will manufacture all kinds of staff work for exterior work and fiber for the plaster or interior decorations. Recently the company has been manufacturing building and architectural ornaments.

MISSOURI.

The proprietors of the cement factories at Neodesha, Kan., have arranged to establish a \$50,000.00 plant at New Orleans.

A new enterprise will be launched in Bunceton, Mo., this spring.

Joe C. Stephens is backing and looking after a company that will manufacture hollow concrete blocks which have been patented and placed upon the market by the Miracle Pressed Stone Co., of Minneapolis, Minn.

The M. E. Bolle Cut Stone and Contracting Co., of Carthage, Mo., has filed articles of incorporation with a capital stock of \$5,000.00. The company is composed of a part of the stockholders of the Carthage Marble and White Lime Co., and N. E. Bolle & Co.

PACIFIC COAST.

SAN FRANCISCO, CAL., February 13.—Building operations in San Francisco have started out unusually well and builders and contractors believe that the coming year will witness a greater amount of construction, particularly in heavy work, than any former year. During the month of January the construction work undertaken amounted to \$1,356,161.00, a larger total than for any previous January. It is notable that a great deal of fire-proof work is booked for the early part of the year. Already preliminary work is under way for a half-dozen or more heavy office buildings of fire-proof or semi-fire-proof construction.

Last week contracts were let for the construction of the new Monadnock building, a ten-story fire-proof building at 641 Market Street. This building will be constructed of steel, stone, terra cotta and sand lime brick. The general contract for the work was let to the American Hawaiian Engineering & Construction Co. for \$600,000.00. A sub-contract for 1,250,000 sand-lime brick has been awarded to the Holland Brick Co., of Antioch, Cal.

The Pacific Stone Co. has opened offices in the Crossley building, San Francisco, and is now getting out samples of its artificial stones from its plant at Black Diamond, Cal. The company is working the Stevens Litholite process.

J. R. Delano, president of the Rocklin Granite Co., 126 Jessie Street, is organizing a new marble company to work some marble quarries in eastern Washington, which are owned by Mr. Rocklin and his associates. The new company will have headquarters in the Crossley building, where some sample stones are already being shown.

The general substitution of crude petroleum for coal by the railroad companies and manufacturing concerns is necessitating a change in fire-proof construction in San Francisco and other cities of California. Fire-proof contractors have heretofore used a basis of cinders for flooring and similar work, but the abandonment of coal as a fuel is necessitating the use of crushed rock in place of cinders. Contractors complain that this change to a heavier material necessitates heavier steel work and is otherwise unsatisfactory. The only available rock is blue rock, and this is not always obtainable in a pure state. A satisfactory substitute for cinders is still being sought after by both architects and builders.

Gray Bros., quarrymen and contractors, of San Francisco, have been given a contract for 3,000 long tons of stone at 65 cents per ton, to be used in the construction of the new freight slip on Central basin, San Francisco harbor. Chief Engineer Norton, of the Board of Harbor Commissioners, has been directed to prepare plans and specifications for a further extension of twenty feet on the north side of Pier 25.

The San Francisco Sulphur Co., 318 Front Street, has completed its extensive plant at Bay and North Beach Streets, at a cost of \$80,000.00. Besides sulphur, the company is turning out a superior grade of blue stone.

The Chico Construction Co. has been incorporated, with headquarters at Chico, Cal., for the purpose of establishing a cement brick factory at that point. The company will also engage in the crushing of rock in that locality. The directors of the company are: F. M. Clough, Pacific Coast representative of the Diamond Match Co.; J. B. Robinson, general superintendent of the Butte County Railroad; H. A. Patterson, a contractor of Chico, Cal.; S. B. Nourse, of the Butte County Railroad, and F. A. Clough, superintendent of the Chico Electric Railway Co. The company has an authorized capital stock of \$25,000.00.

The Diamond Sand Lime Brick Co. has been incorporated at San Francisco with a capital stock of \$250,000.00, by J. G. Treanor, William H. Spalding, L. E. Burke, W. F. Barnes and S. W. Barnes.

The Concrete Construction Co. has been incorporated in Oregon with headquarters at Portland.

The Spokane Traction Co., J. P. Grave, president, Spokane, Wash., is preparing to construct a concrete dam at Nine-mile Bridge, near Spokane. The dam will be 50 feet high, will be 100 feet long at the bottom and 350 feet long at the top, 30 feet wide at the base and 8 feet wide at the top. The dam will be used in connection with the company's power plant, which will be constructed at a cost of about \$600,000.00.

W. J. Dingee, of the Eureka Slate Co., proprietors of quarries at Slatington, near Placerville, Cal., states that the company is about to open up several quarries at that point. Land is now being cleared of timber preparatory to opening the quarries. New machinery is to be installed and the output will be more than doubled.

The American Magnesite Co., owners of a magnesite deposit near Livermore, Cal., is preparing to furnish a large quantity of magnesite to the Rose Brick Co., of Oakland, Cal., which will manufacture magnesite bricks at the latter point. The Plastic Construction Co. will also establish a plant in Oakland for the purpose of manufacturing tile from magnesite rock furnished by the American Magnesite Co. The three companies are largely owned in common, the heaviest stockholders being J. D. Rose, of Sharon, Pa., and H. C. Stilwell, of Fruitvale, Cal.

The Washington Portland Cement Co. has been incorporated at Seattle, Wash., with a capital stock of \$200,000.00. The directors are: H. N. Anderson, S. M. Anderson, A. S. Austin, E. C. Miller and W. W. Butler.

The Roswell Cement Roof Factory Co. has been incorporated at Roswell, N. M. The company will establish factories at Roswell and Albuquerque, and will also have a branch office at Santa Fe.

The Sky Blue Marble and Onyx Co., of Riverside, Cal., is preparing to install new machinery for the treatment of marble and onyx. Saw, polishing and rubbing machinery, to be operated by electric power, will be installed during the next few months. The company's plant will hereafter be under the management of Paul Kretek.

The Concrete Steel Construction Co., of San Francisco, is preparing to submit an amendment to the San Francisco building ordinance which will permit of the construction of concrete steel buildings in this city.

Merry & Cole, of Sacramento, Cal., have been awarded extensive contracts for the construction of concrete curbs, the relaying of stone block gutters on concrete foundations, and the construction of concrete catch basins in the city of Sacramento.

Charles W. Ladd and Gustave Baumann, of New York, are in California and have been spending some time at Watsonville, Cal., examining into the feasibility of constructing extensive cement works near that place. It is understood that their plans embrace a cement plant with a capacity of 1,000 barrels per day.

The Columbia Marble Co., with offices on New Montgomery Street, San Francisco, reports that its quarry at Columbia, Tuolumne County, is now in full operation and that marble for both interior and exterior work is being turned out. The company has recently completed the marble work in the interior of the new Merchants' Exchange Building, on California Street, and the installation of new lavatories in the Palace Hotel, on New Montgomery Street.

Mark L. McDonald, Santa Rosa, Cal., is arranging to put in a rock crushing plant at his quarry in the outskirts of that city.

John A. Laughlin, of the American Hydraulic Stone Co., with headquarters at Denver, Col., is now in Albuquerque, N. M., making arrangements for the establishment of a plant at that place.

For the Retailer.

The National Builders' Supply Association.

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Official Organ, ROCK PRODUCTS.

At the Lumber Dealers' Association.

CHICAGO, ILL., February 23.—Among the association exhibitors at the Retail Lumber Dealers' Association convention of Illinois, held in Chicago, February 15, 16 and 17, the roofing concerns were in the majority. They all had displays of one kind or another to catch the eye and to interest the retail lumberman, with a box of good cigars on tap and souvenirs of various descriptions.

There were cement block, cement and lime men to be seen, showing how it was done, and presumably talking of the good qualities of their own particular goods. We can't forget the plaster men, they associate themselves in a way with the man who is running a retail lumber yard.

Among the roofing manufacturers represented was the Heppes Co., Chicago, by Mr. O. A. Heppes, secretary. Mr. Heppes had many callers, and judging from appearances, was a very busy man.

A party of two representing the National Roofing Co., Tonawanda, N. Y., was passing out samples and good cigars to their many visitors, and who sent them away feeling happy, were Messrs. F. A. Fuller and Thomas B. Leon.

The Trinidad Asphalt Manufacturing Co., 101 Lake Street, manufacturers of paving, roofing, cold water paints and other materials, was represented by Mr. E. N. Biegler.

H. F. Watson Co., manufacturers of building and roofing paper, was represented by Mr. J. F. Hicks, their Chicago representative. Mr. Hicks was busy passing out a handsome memorandum book, which just fits the vest pocket. The mills of the company are at Erie, Pa.

James C. Woodley & Co., Chicago, was represented by Mr. James C. Woodley, who handed to each caller a bill book containing check for one dollar. The book was made of composition rubber roofing.

The Western Roofing and Supply Co., 177 Randolph Street, Chicago, had a number of representatives at their exhibit, and circulating through the throngs of lumbermen in the corridors, they had a unique souvenir in the way of a clothes brush. Among the representatives present were: E. A. Cunningham, J. S. Drummond, H. C. Onick, and H. B. Rowell.

Paroid roofing, manufactured by F. W. Bird & Son, East Walpole, Mass., was represented by Messrs. Geo. W. Whitcomb and A. R. McAlpine. Rex Flintkote roofing, J. A. and W. Bird & Co., Boston, Mass., were represented by their Chicago office, passing out samples, circulars and cigars.

"B" stands for Barrett among the roofing men. This B was a prominent character at the convention; their room was always full. They had an abundance of literature pertaining to the good qualities of their roofing and also as a reminder they distributed a dated calendar with a celluloid top—and printed matter headed with "Barretts." The company was represented by Mr. W. S. Adams. The Acme Cement Plaster Co., St. Louis, Mo., was well represented by H. Y. Pollock, of Springfield, Ill., and T. J. Bishop, St. Louis. These gentlemen were kept busy talking Acme Plaster and giving out as a souvenir a little calendar which will last for a period of ten years.

The American Clay Products Co., Chamber of Commerce, Chicago, had many visitors looking over their display of hollow building blocks. The interests of the company were taken care of by Mr. M. W. Lauer. Ask him about the fish story.

There was a sound of some terrible knocking at one end of the lobby. Strolling up the writer found a man with a two-pound hammer pounding away at one of Hotchkiss' Concrete Stone Co.'s building blocks in an endeavor to crack it, but his efforts were fruitless. The Hotchkiss interests were looked after by W. S. Hotchkiss, his son and S. C. Irving.

The Sandusky Portland Cement Co. was represented by Messrs. Glen M. Porter and F. J. Morse. The Marblehead Lime Co. was to be found in Parlor A. Messrs. C. C. Bishop and F. P. Vanhook of Bloomington, Ill., were representing this concern.

The Miracle Concrete Building Block Co. had one of its blocks on display and found many interested parties.

Ideal Concrete Machinery Co., South Bend, Ind., distributed its announcements to the effect that on February 1, the company moved its general office from Auburn, Ind., to South Bend, Ind., where also its factory will be located as soon as completed. The factory will be modern in every respect and will be located on W. Washington and Circle Streets.

The Janesville Cement Post Co., Janesville, Wis., had a nice display of its posts on hand. Mr. W. J. Eade, manager of company, was on hand and was kept busy.

The Ste. Genevieve Lime and Quarry Co., St. Louis, Mo., had samples of its product on hand. These were handled by the company's representative, Mr. J. J. Helfer.

Mr. W. W. Sawyer represented the Rockwell Plaster Co., of Rockford, Ill.

P. C. Smith was there in the interests of the Plymouth Gypsum Co., Fort Dodge, Iowa.

Messrs. C. V. Eades and S. R. Holland had the interests of the Eastern Granite Co., New York, at heart.

Messrs. E. W. Willard, B. C. Beckman and F. W. Merrill talked of the good qualities of the Standard Paint Co.'s production.

Mr. R. T. Spencer talked fire brick, made by the Chicago Fire Brick Co.

Mr. H. L. Backus sells cement and represents the German American Portland Cement. We presume he had a number of the owl calendars with him as they were quite conspicuous around the corridors.

Mr. H. B. Morgan, from the Elastic Plaster Co., was there; also B. A. Williams, Selma Cement Plaster Co., Lawrence, Kan.

Chas. G. Reid represented Meacham & Wright. They handle cement.

Messrs. S. I. Fulton and E. H. Jones were representing the interests of the U. S. Gypsum Co., Chicago.

Mr. Wm. Dickinson and George M. Henderson represented the Marquette Portland Cement Co.

Mantel and Tile Men in Convention.

The Inter-State Mantel and Tile Dealers' Association held its second annual meeting at the Colonial Hotel, Pittsburg, Pa., February 14, 15. This is a new organization, having been formed at Nashville, Tenn., about eleven months ago, with eleven members. As an evidence of the remarkable growth of this association there were ninety-five members on the rolls when the second meeting was called to order. In addition to this seventy more members were enrolled during the past meeting. This is expected to be doubled before the next convention to be held at Baltimore, Md., on the second Tuesday in February.

The organization includes manufacturers of mantels and tiles east of the Mississippi River to the Atlantic Coast. The object of this association is to form a closer union between the manufacturer and dealer, and this has already been evidenced in many ways.

Aside from a number of trips to the surrounding towns a banquet was held which was largely attended and much enjoyed.

The following officers were elected at the meeting for the coming year: T. J. Keating, of M. Keating & Sons Co., Chicago, president; A. J. Croaker, of Providence, R. I., first vice president; R. E. Logan, of R. E. Logan & Co., Pittsburg, Pa., second vice president; Ben P. Phillips, of Phillips & Co., Nashville, Tenn., secretary; W. J. Northcross, of the Northcross Mantel and Tile Co., Memphis, Tenn., treasurer. The executive committee is composed of the following, including the president and secretary as ex-officio members: George F. Eubank, Atlanta, Ga.; C. P. Brecher, Louisville, Ky.; Edward Dodd, Cleveland, Ohio; J. A. Merriman, Baltimore, Md., and J. S. Miller, Philadelphia, Pa.

Preparing for an Increase.

DECATUR, ILL., February 22.—L. N. Cope writes us, saying: "All kinds of building material will be good in this locality the coming season. Labor conditions are good with but little friction between the bosses and men. All kinds of material men are preparing for an increased business over last year."

The Richards Brick Co., of Edwardsville, Ill., has been organized with a capital stock of \$25,000.00. The company will sell building materials. Ben H. Richards, Ben Howard Richards and Russell H. Richards are the incorporators.

Jas. McLaughlin Co., New York, N. Y., capital stock \$10,000.00. The directors are: James McLaughlin, Warren Leslie, New York; John D. McLaughlin, Great Kills, L. I. The company will deal in sand and building materials.

CLEVELAND ECHOES.

Continuation of the Instructive Papers that were Presented at the Recent Meeting.

CONCRETE CONSTRUCTION.

BY CHAS. A. MATCHAM.

It is with a feeling of very general satisfaction that we note the advance concrete has made as a building material within recent years, by virtue of its durability, adaptability and the facility offered for rapid construction and moderate cost.

Concrete in its various forms and uses is a subject in which most of us here are interested, it is a subject on which all dealers in building materials should know something about. If you are selling materials for concrete, you should know in what proportions they should be used to obtain the best results. Architects and builders, as a rule, know all about concrete; the architect draws up his specifications stating what kind of cement

he requires, what the tests should be, he also specifies the kind of sand and stone to be used, and the proportions of each. In this way it is pretty certain that good results will be accomplished. There are others, however, such as small contractors, pavement layers, individual firms who do their own concrete work, sewer pipe makers, concrete block manufacturers and numerous others who can not draw up specifications, or afford to have their material tested, and such parties rely on whom they consider responsible dealers and look to them for a good deal of information as to how they should use the materials they buy of them.

Cement is one of the most important materials entering into concrete. Concrete can well be compared to iron. Take a low grade, cheap ore and you have a poor piece of iron. Take a low grade or adulterated Portland cement and you have a poor piece of concrete work.

The same importance must be attached to the sand and stone to be used, the former must be clean and sharp, the latter clean, and the rougher the surface the better. Either one of these materials being of poor quality will be sufficient reason for poor concrete.

There are other materials often used for concrete, such as furnace slag and ashes. These should also be carefully selected, but such materials will not give the results as may be obtained with crushed stone, the latter having about 15 per cent. more strength than ashes in concrete.

The size of stone for concrete may vary, the coarser the stone the more sand is necessary to fill the voids. Crushed stone one inch and smaller, together with an equal quantity of stone, one to two inches, will make the best concrete. In making concrete, in all cases the sand and cement should be thoroughly mixed dry in their proper proportions. Then add the stone, and again mix dry, then add the water. The quantity of water will depend on the nature of work to be done, and this I will talk of later.

Mixing concrete. For small work it is usual to mix concrete by hand, but for large operations I can not recommend too strongly using a mixer, as it is quicker, less expensive, and gives decidedly better results. There are a number of mixers on the market of various makes, which can be found in most engineering journals.

A type of mixer I have always used myself, is a trough with a 24-inch paddle conveyor; 10 feet long, set in a wrought iron trough elevated so as to discharge into a cart which hauls the concrete to its location for placing.

Having given a brief description of the materials necessary for making concrete, I will proceed to the subject of concrete work in general.

Concrete for Foundations and Buildings

First. In excavating for foundations, it is usual and necessary to excavate sufficiently deep so that frost will not get below the foundation, which is generally 18 inches to 2 feet, or until reaching solid ground. For a small building, one story high, say 16 to 18 foot wide by any length, 8-inch walls are sufficiently thick from foundation up, the first few inches of foundation should, however, be a few inches wider. The concrete should be mixed in proportions of one part cement, four parts sand, and seven parts stone.

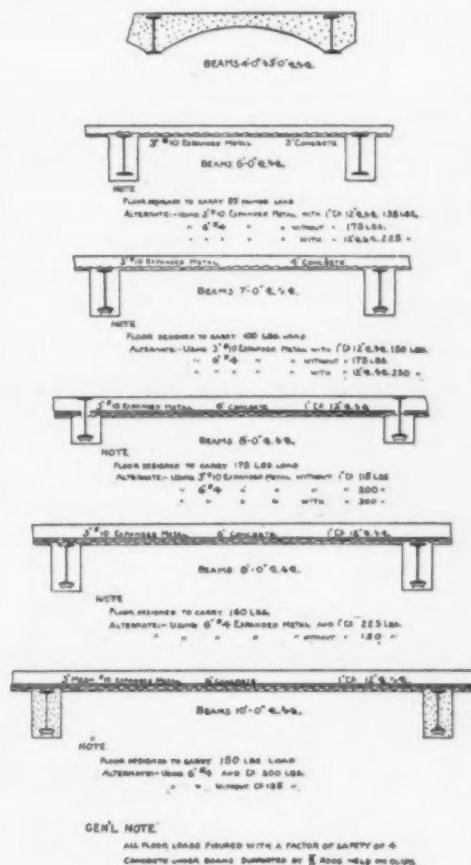
Second. If the building is a residence or warehouse, two stories high, with no wider spans than 16 to 18 feet, then 10-inch walls would be necessary, and in such cases the foundation for about one foot in height is recommended to be a few inches wider. The concrete to be mixed in the same proportions as described in the first.

Third. For a more spacious residence or warehouse, which may be of considerable size, a 12-inch wall would be recommended. Where heavy loads, or machinery, may be required to rest on the floors, it would be necessary to engage the services of an engineer to give the necessary thickness of walls and floors, as the thickness, weights and strengths must be figured out practically and methodically. For such work it would be well to make the proportions of concrete for walls, one part cement, three parts sand, and six or seven parts stone, the proportions of sand to stone, however, to be determined by the size of the stone. The sand should be in proportion to fill all voids in the concrete.

I here wish to introduce a table showing the pounds of cement, sand and stone required per cubic yard of rammed concrete with various mixtures.

Mixtures.		Stone 1 in. & Und. dust screened out.	Stone 2½ in. & Und. dust screened out.	Stone 2½ in. with most small stone screened out.	Gravel ¾ in. and under.
Cement.	Stone.	Cement, Sand, Stone, cu. yds. bbls.	Cement, Sand, Stone, cu. yds. bbls.	Cement, Sand, Stone, cu. yds. bbls.	Cement, Sand, Gravel, cu. yds. bbls.
1 2 4	4 0	1 46 0 44 0 89	1 48 0 45 0 90	1 53 0 47 0 93	1 34 0 41 0 81
1 2 5	5 0	1 119 0 56 0 95	1 21 0 46 0 92	1 26 0 48 0 96	1 103 0 42 0 83
1 3 0	0	1 110 0 51 0 95	1 02 0 52 0 97	1 10 0 54 0 99	1 63 0 47 0 78
1 3 0	0	0 91 0 44 0 97	0 92 0 44 0 97	0 96 0 45 0 97	0 92 0 42 0 81
1 4 0	0	0 83 0 51 0 89	0 84 0 52 0 90	0 88 0 53 0 91	0 84 0 38 0 89
1 4 0	8 0	0 77 0 47 0 93	0 78 0 48 0 95	0 81 0 49 0 98	0 71 0 43 0 86

Fourth. The old method of arch flooring, as here shown, is fast being abandoned, and being superseded with wider spans with expanded metal, the advantages being less iron and concrete in construction, and greater strength, following are some suitable spans showing thickness of concrete necessary when expanded metal is used in connection with same. These spans and concrete are figured for cinder concrete, if cement, sand and stone are used in floors, they are good for 15 per cent. more carrying capacity. Reinforced concrete beams, in many instances are taking the place of iron beams.



Fifth. For cellar floors, where no heavy material of any kind is to set, proportions of one part cement, four parts sand and eight parts stone is recommended, the thickness of the concrete to be $2\frac{1}{4}$ inches with a top surface of $\frac{1}{4}$ inch plastered on the concrete as soon as the concrete is tamped down.

Sixth. For cellar floors in warehouses where heavy trucking or storing is required, five to six inches thick concrete is recommended, and concrete should be made of proportions of one part cement, four parts sand and six parts stone.

Seventh. For pavements, curbs, gutters, driveways and stables, a concrete made of one part cement, three parts sand and five parts stone is recommended, the top surface, composed of one part cement and one and one-half parts sand, should be put on the concrete immediately after the work is laid, and should be well worked in with a trowel. While it is not so necessary to face off the side of curbing so quickly, it is better if same is put on as soon as side boards can be removed.

Pavements should be laid off in blocks of about 5 x 5, 5 x 6, or 6 x 6 feet square, larger blocks than this may be cause for cracking. Care should be taken that the joints are perfect, leaving a clear space between each slab. For this purpose it is well to put a piece of thick soft paper, or tar paper, for separation, some prefer a piece of sheet steel, to be removed after blocks are made, either will do as long as the joint is perfect.

Oftentimes through carelessness of pavement layers, the joints are not made perfect, and the joint through top surface is not in line with under joint, under such circumstances zigzag cracks will appear from $\frac{1}{4}$ inch to 1 inch from joint line shown on surface. A half inch space at ends of pavements should be allowed to be filled in with sand on top of ashes, to allow for any expansion. Ashes are recommended to be laid below concrete pavements, 18 to 24 inches thick, according to depth frost is considered liable to penetrate.

In laying the topping for pavements, care should be taken that there is not too much water in the mixture, water should not come to the surface in any quantity, the mixture should be made sufficiently pasty to work with a trowel. I recommend for all pavement work a rough finish, it has numerous advantages, most noticeable being that it is not necessary to have the troweling a smooth pavement requires, it will not show hair cracks, it is easier to walk on in winter time, and is less expensive to lay, not requiring the time expended to make a smooth surface. Many cities are enforcing the rough surface to be made on all new pavements laid.

Half cracks shown on pavements, or surfaces which have been plastered with cement and sand, are often attributed to the cement, the contractor complaining that the cement is too fresh, or has too much free lime. This is not usual, and is very seldom, the fault. These hair cracks are invariably due to too rich a mixture for the topping, or to too much troweling, whereby the cement and water is brought to the surface, or too much water is added for the mixture. Either one of these are reasons for hair cracks.

The surface should be well plastered onto the under concrete, the topping should be leveled off with a straight edge laid on the scantling on each side which forms the width and height of the pavement. This straight edge should be worked gradually forward leaving a rough top, after this is partially set, or the water all absorbed, a smooth board should be used for troweling instead of a steel trowel, and only slight troweling is necessary, the less troweling that can be done on any kind of surface work, the greater the chances of successful work. Too much troweling aids to separate the cement from the sand, thus bringing a thin coating of cement to the surface, so that after a pavement is dried out, this thin scum of neat cement, which has been formed by the troweling, will soon wear off leaving the bare sand for surface, and the cement having been drawn away from the sand underneath the pavement will wear badly, and show patches of bare sand.

This also has been claimed by pavement layers to be due to the cement. Nine times out of ten it is due to the workmanship.

In all kinds of building work, such as walls, foundations for engines, or piers, particularly where there may be vibration, I recommend reinforcing with iron rods, say $\frac{1}{4}$ inch, set horizontally and vertically, about 12 inches apart. Over door-ways, windows and arches, lay two or three rods, $\frac{1}{4}$, $\frac{3}{8}$ or $\frac{1}{2}$ inch, according to width of span, this will obviate cracking.

Where a neat finish is required to a residence or warehouse, I would recommend a finish of plaster composed of one part cement, one part lime, and five parts gray or yellow sand, according to finished color desired.

For very fine work, two coats may be used, the first composed of one part cement and three parts sand, afterwards a thin coat of cement, lime and sand mortar. Voids in concrete will be found an advantage where plastering is to be done, and no fear may be entertained of the layers of plastering not adhering to each other, if properly applied.

Before laying plaster, the walls should be sprinkled with water for both the first and second coat, in each case the plaster should be rubbed hard onto the concrete to form adhesion, and while surfacing, water from a brush can be sprinkled, which will be found advantageous for good even surfacing.

Concrete Blocks and Imitation Stone Work.

There is becoming a large demand for building blocks, window sills, cappings, columns, and artistic work, a large number of companies are starting up, or are already in operation in a number of both large and small towns throughout the States. This business is found to be most profitable. There are numerous machines manufactured for making concrete blocks, which are mostly of the same, principal, and give practically the same results. The addresses of manufacturers can be found in most all engineering journals.

As to the cost of making these blocks, from reliable information I have gathered from a certain factory, following is their cost and price received:

One machine making 150 hollow blocks daily, takes

11 tons of sand.....@ \$1.00	\$11.00
13 barrels cement...@ 1.00	13.00
Fixed charges and labor.....	20.00
Hauling	5.00
Incidentals	2.00
	<hr/> \$51.00
Price received delivered on work, 50 cents each.....	75.00
Profit per day.....	24.00

These blocks measure 32 inches by 9 inch face and 12 inches deep, and weigh about 130 pounds each.

If such a plant had double the output, there should be a saving of 5 cents per block.

Blocks 32 inches long, 10 inches wide and 9 inches high are very much in demand. These blocks will displace 42 common brick in a wall. To compare them with common brick, we will say that common brick is \$12.50 per thousand in the wall. If one of these blocks will displace 42 bricks, 24 of them will be equivalent to 1,008 brick in the wall. If one of these blocks cost 20 cents, 24 of them will cost \$4.80. If it costs 5 cents to lay them, 24 will cost \$1.20. This added to \$4.80 would make a total cost for 24 blocks in the wall, which would displace 1,008 brick, exactly \$6.00. Allowing for hauling and fixed charges, there is sufficient margin left between the cost of concrete blocks and common brick for a handsome profit.

Sand and cement brick, made by machinery, can also be produced at a cost of \$6.00 to \$7.00 per thousand. The mixture being about one part cement to three and one-half parts sand. These bricks are as neat in appearance and serviceable as pressed brick, and are selling for about \$18.00 per thousand, f. o. b. cars.

Cement blocks are made in different manners, some blocks are made by mixing one part cement to five or six parts sand or crushed stone, the proportions of sand and stone to cement depending largely on the quality of each. Experimental tests will soon show the best proportions of each.

The mortar is mixed reasonably dry, and then well tamped, usually by an iron rammer. There is another method for making concrete blocks, moldings, etc., and that is by having a wetter mixture and pouring the concrete into the mold. By this method there is less liability for voids, the blocks are denser and less liable for moisture to penetrate. All kinds of artistic work, such as columns, moldings, urns, window sills, cappings, balustrading, etc., can be made by either method. The wet system is perhaps preferable in some cases, although it requires more care and study than by the dry method.

The making of window sills, capping, columns, etc., requires a pattern maker for making the molds. This is a small item of additional expense and can always be taken into consideration when estimating. The cost of turning out such work enables the manufacturer to turn out goods equal to cut stone and for far less money.

The perfection of results obtained in the production of this marvelous building material during the past few years, insures for it the hearty support and endorsement of the most up-to-date and progressive architects and builders of the country.

We can now consider we have passed the primary class of schooling, and entering the secondary. I wish now to address you on steel concrete construction.

This subject covers such a large field of interesting topics, that it is impossible, within the limited space of time allotted to this paper, to attempt more than to deal with the principal facts and points of interest in a very general way.

Though it may be some time before the superiority of steel concrete construction is universally recognized, it is pretty generally acknowledged that it has earned a place comparable with the best type of construction and that it is worthy of the consideration of every one interested in engineering or building.

Every engineering or building operation to-day aims to secure the highest degree of permanency at the least cost and in the least time, consistent with the end in view and the means at hand; and the value of a system of construction may be ranked according to the degree with which it meets these requirements. Permanency means durability and strength; it means the capacity to resist physical and chemical changes induced by agencies imposed upon it by work and the action of the elements. It is this power to resist change which is regarded as the crucial test of a structural system and its component parts, and in spite of its enemies and their groundless arguments, it is fast becoming recognized by expert authorities that there is perhaps no system of construction to which this power applies with more force than to steel concrete construction.

Depending upon the concerted action of two widely different classes of materials, concrete and steel, it combines them mechanically and chemically so as to utilize and preserve the integrity of the most valued qualities of each. The concrete serving as the medium for resisting compression and for assisting in transmitting stresses which engage the steel in tension, protects the steel from every form of chemical or other mechanical change detrimental to its life and which it itself can not resist. It absorbs from any moisture present, every particle of carbonic acid gas which has begun to attack the steel or which threatens corrosion; for corrosion occurs with the combined action of moisture and carbonic acid gas and this combination can not exist in the intimate presence of an alkali; and cement is an alkali. It protects the steel against any attack by fire that constructions are subject to with an efficiency only approached by the best quality of cement mortar and hard burned brick. The steel affords all the tensile strength which concrete lacks and in its protected condition maintains an elastic and homogeneous character not offered by any jointed system of construction, and there is little doubt that the elimination of joints plays an important part in the question of durability and of the fire-resisting properties of a construction.

It was M. Monier, of France, who first extensively applied the principle of combined steel with concrete in construction; and water-pipes of concrete and steel laid by his system years ago and recently officially examined attest to the perfect preservation of the steel imbedded in the concrete. The durability of a properly made concrete, that is, its ability to resist the effects of time and the elements is no longer a mooted question, and the durability of steel imbedded in a properly proportioned and thoroughly mixed concrete of good materials is universally accepted by extensive investigators and experienced practitioners. The Boston Experimental Insurance Station, under the direction of Prof. Norton, has proven this point beyond question.

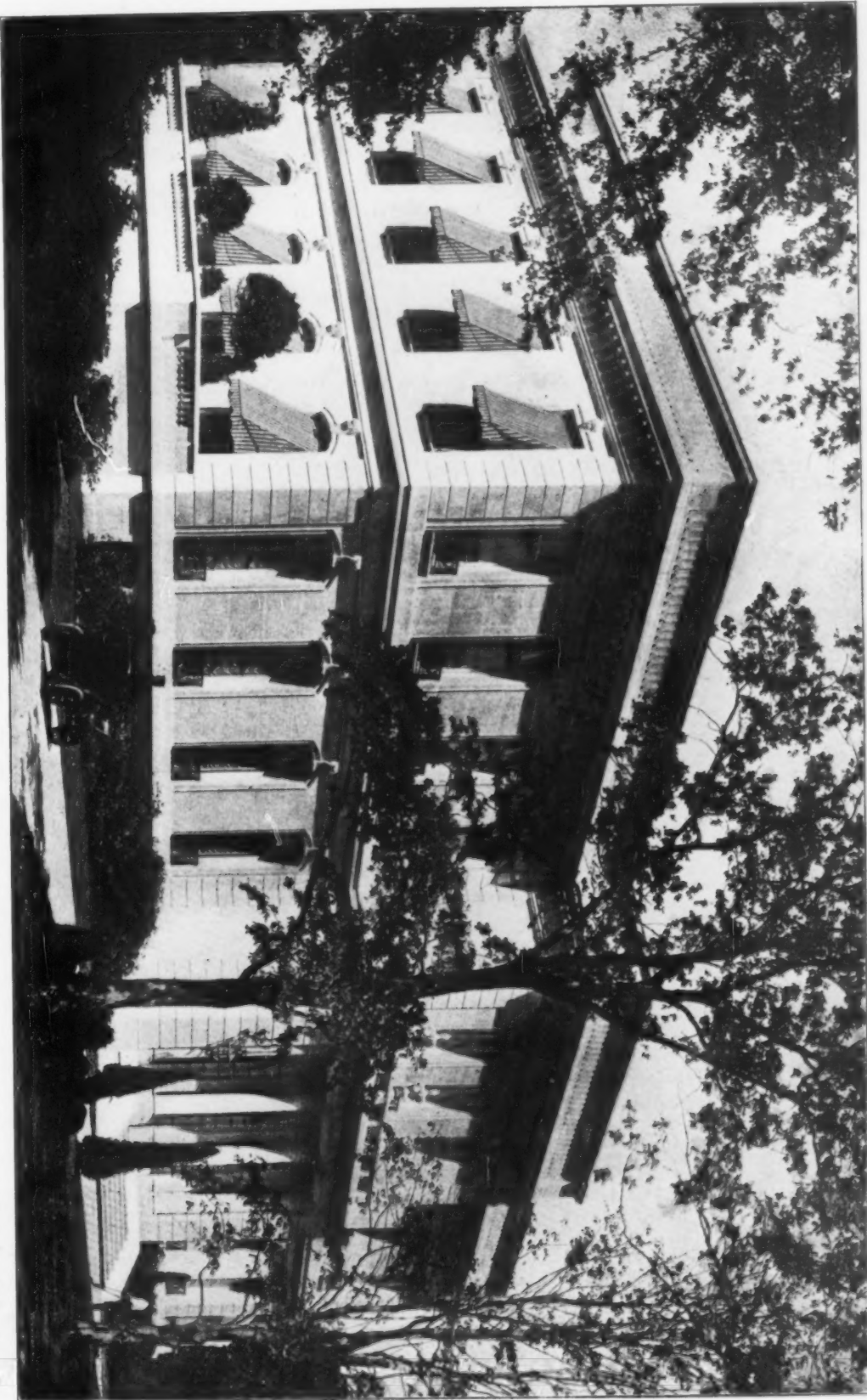
Mr. Hyatt, in London, made the earliest extensive investigation in the use of steel bars as tension members, utilizing individual bars of various shapes and bars in the shape of grillage, and the tests made for him by Mr. Kirkaldy in 1875-6 are among the most complete ever made. He demonstrated the importance of securing a mechanical grip between the concrete and the steel and the practicability of applying the combination to cross bending members of construction, such as floors, sidewalks, vault-covering, beams, etc. Mr. E. L. Ransome at this time conceived the continuous mechanical grip secured by cold twisting, square, steel bars, producing a spiral threaded bar similar to a screw and increasing the elastic limits 56 per cent., and increasing the ultimate strength over 35 per cent. Coming to this country he began his practice in the far West, undertaking complete concrete steel structures, in many of which, doors and windows were the only perishable materials, with walls, floors, beams, girders, roof and footings made throughout of steel concrete construction, a practice he has carried on ever since, doing more perhaps in America than any other man to bring this system to prominence. M. Melan developed bridge construction in Europe and M. Melan and Mr. Thatcher in America, and in 1898

the Hennibique system became prominent in Europe, co-temporaneous with a dozen other systems in France and Germany, the commercial value of whose works runs well into the millions. Eventually the French government took up the subject and established a permanent bureau of investigation with M. Considere as the most prominent worker. The Society of Architects and Engineers in both Germany and Austria associated to carry on investigations and tests. By these various agencies, numberless tests of every description have been made both on test pieces and on actual field construction, which determine the principal properties, attributes and qualities of concrete and steel concrete construction, and a fund of information has been secured to provide the basis for intelligent engineering design and practice. Many important facts have been demonstrated and proved to show the practicability of this construction and so completely has this demonstration been made in the countless constructions, both abroad and in the United States, that with the system still in the process of development, it is difficult to predict to what limit of value, usefulness and adaptability it will reach in its perfection. This perfection is evidently assured when one views the advance made in the past two years in the character of structures erected and the consideration it is receiving at the hands of the highest organs of engineering ability in the country. Our four great American engineering societies, The American Society of Civil Engineers, The American Society for Testing Materials, The Cement Manufacturers' Association, and the American Railway Engineering and Maintenance of Way Association, all have appointed committees on cement, concrete or steel concrete construction and the work already accomplished in the direction of securing standard tests for cement and uniform specifications by the American Society of Civil Engineers and The American Society for Testing Materials, is a fair indication that the work of the other committees on standardizing concrete steel engineering will be of equal value and assistance to the profession. The program of their work includes investigations in several universities and laboratories throughout the country and the assistance of a large corps of our foremost chemists, engineers and manufacturers who are devoting their best endeavors in that direction.

A concrete, not equal to the Portland cement concrete of to-day, formed the basis of the construction of the great Roman Empire, and of such as have withstood the ravages of man, 2,000 years of weathering in severe climates, have proved it more durable than masonry, and it naturally stands to reason that a homogeneous material has a decided advantage, as before mentioned, over jointed materials. The steel concrete construction of this decade has proved no exception to the rule. Structures erected fifteen, twenty and thirty years ago, in as perfect condition to-day as when erected, prove the integrity of their strength, durability and power to resist the various forms of attack to which constructions are open. More recent years have produced a great increase in the number, scope and boldness of those constructions, and they have passed through the ordeal of every kind of practical test, enduring with remarkable results, most severe conditions of loading, weathering and fire, with an evident ability to increase rather than decrease their resistance as time goes on. In fact, concrete is distinguished to a certain extent from other material in construction, in that its efficiency begins to increase from the time of its inception, when other materials have already reached their maximum efficiency and the beginning of their deterioration immediately at hand.

The ability to secure concrete of such a character and as is necessary for the best form of construction, by ordinary methods of workmanship in the hands of commonly conscientious and experienced foremen, has been demonstrated beyond a question; but naturally certain conditions must be observed to secure this work and the combined action of the steel and concrete. The steel must be free from loose scales and oil. The concrete must be closely incorporated about the steel; the best practice to effect this is to use concrete of a plastic consistency rather than of dry or granular consistency, as the plastic concrete will reach the smallest interstices of the steel and form by puddling more intimately than by the use of dry concrete; furthermore, it makes a more im-

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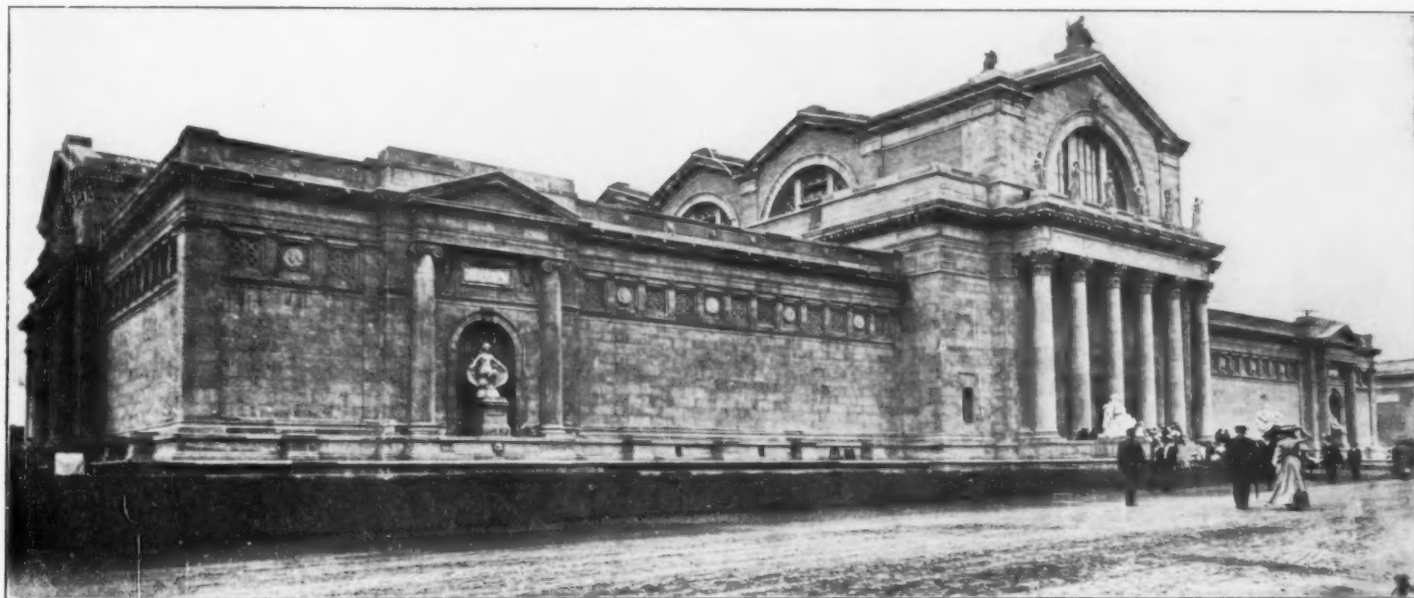
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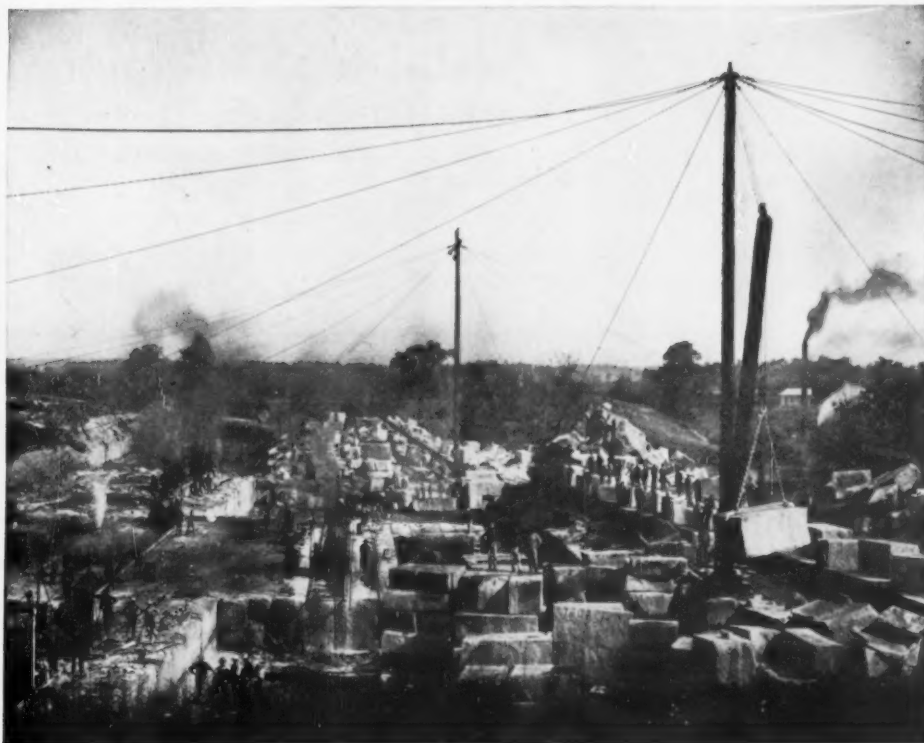
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More Oolitic Limestone Ads. on Page 7.

pervious concrete with which to protect the steel. The loss of strength in its early age due to making a concrete plastic, is more than allowed for in the limit of stresses permitted and tests of one year or more has demonstrated that it regains this loss in time.

As an example to show the action of concrete and steel under various conditions of weather, I had made up in January, 1902, which is three years ago, a number of 6 inch cubes. In some of these there was imbedded pieces of steel, some with the iron painted, and some without, some of each set out in the open air exposed to both summer and winter weather, and at times these blocks were covered with snow and ice, and some of the blocks set in the bottom of a river. These I have watched from time to time to see if they were still there, or whether they had disintegrated, or the water had washed them out of existence. A week or so ago I took two of these cubes from the open air, and one from the river. These I sent to Philadelphia to have broken, and the following is the report from the Spackman Engineering Co.:

"We report the tests on three 6 x 6 x 6 inch concrete cubes, made of one part cement, two parts sand, and five parts crushed stone, and containing a 3 x 3 x 3 inch block of steel in the center:

"No. 1. Made February 1, 1902; 3-inch steel cube painted with metallic paint.

"Failed at 104,660 pounds; 2,907 per square inch of surface.

"No. 2. Made January 3, 1902; 3-inch steel cube not painted.

"Did not fail at 150,000 pounds; withstood 4,166 pounds per square inch.

"No. 3. Made January 3, 1902; 3-inch steel cube not painted.

"Failed at 105,140 pounds; 2,320 pounds per square inch."

No. 1 was the cube taken from river, and the sample here shown, shows the water has had no effect whatever on the steel. This block of steel was originally painted, which has now partly disappeared, the concrete, however, shows that some of the paint had stuck to the concrete.

No. 2, for some reason, withstood more than the testing machine was good for. It failed to break at 150,000 pounds. We broke the concrete, therefore, by hand. The steel piece taken from this cube is here shown and hardly shows a blemish, and is as good as when first put in the cube.

No. 3 failed at 105,140 pounds, and also shows the steel to be as bright as when set in the cube.

Considering these cubes were three years old, it is a good example of the durability of concrete and steel for construction. I have more of these cubes to break at five and ten years, some painted and some unpainted, and exposed to weather and water.

It may be of some interest to learn the character of various constructions by means of examples shown on the screen, and for that purpose such stereopticon views as could be gathered together are herewith shown.

First, I wish to show you the exterior view of a concrete house I built for myself during the past year. This house, including porches, has a frontage of 58 feet, and 55 feet in depth. In starting foundations, they are made 15 inches in width for about one foot, or cellar floor level, from the cellar to roof 13 inches, the concrete mixture being one part cement, four parts sand and seven parts stone. The window and door frames were set as the concrete progressed. The hall floors, 16 x 35 and 8 x 15, are of concrete and expanded metal, the floor is 5 inches thick laid on 12 inch by 17 foot beams, set 8 feet apart. These concrete floors were finished off with cement and tile bordering. The porches are also of concrete and expanded metal resting on an off-set in the concrete walls, with cement and tile finish. The porch roofs are of a clear span of 12 feet, made of concrete and expanded metal.

This expanded metal was of 2-inch mesh, 1/4-inch thick. It was laid on the false work, or boards, which were set to hold the concrete. To this expanded metal was fastened some small channels 1 inch deep and set 2 feet apart, the concrete was then laid and tamped into the meshes and around channels and made 4 inches thick.

The walls and arches are reinforced with iron rods, the walls having 1/4 inch rods set vertically and horizontally about 18 inches apart, and over the windows and porch openings 1/2 inch rods are laid in the concrete.

The columns and urns, as here shown, were cast in concrete in an ordinary wood mold, these columns, urns, etc., were finished off with the house, that is, all the rough concrete after framing was removed, received a rough coat of cement and sand plaster, proportions one to four. This gave an even surface and could have been considered the outside finish, but in order to have a light buff finish, a second coat of lime and yellow sand was put on very thin, proportions being one part lime to four parts sand.

In doing the work over again I should only apply one coat composed of one part cement, one part lime, and five or six parts of white or yellow sand. The molding on columns was finished by applying the coating of lime and sand with a brush. The adhesion of the coating to the concrete has made a perfect bond.

This is one method of building, and which I chose for my house. I think a house with the natural concrete finish, evenly roughed off, would make a neat finish, and of course cheaper, but not as warm in appearance as the buff sand finish of this house.

The fireplace in the billiard room is made of ordinary red clay brick and gray cement brick, the mantel being molded in one piece, cast out of sand and cement. The fireplace in the dining room is of sand and cement brick, and molded mantel.

Much has been said, and a great deal of doubt dwells in the minds of some architects and build-

ers, it must be understood that a contractor has to figure his profit, which should be the difference between cost of concrete and brick work. In other words, if a contractor takes a job in concrete at what good pressed brick would cost, he should have a handsome profit for his work.

I might further state that in considering the cubic yards of concrete in this house, the hall and porch floors and roofs, are figured in, if these had been figured separate, the main walls of house would be less per cubic yard, and of course the floors and roofs more, and it must further be taken into consideration no carpentering was further needed for roofing or flooring or slaters and painters as would be necessary for a brick building. The cost of repairs to such a house are also brought down to a minimum.

The following material was used to a cubic yard of concrete:

320 pounds of cement.
950 pounds of sand.
2,560 pounds of crushed stone.
290 pounds of water.

4,120

The proportions being about one part cement, three parts sand, and eight parts stone.

Perhaps no system of concrete construction has more forcibly impressed its advantages upon the public than that of bridge construction. This view of the Topeka and Kansas Railway bridge is typical of a great number of bridges which have



MR. MATCHAM'S RESIDENCE BUILT OF CONCRETE.

ers, as to the feasibility of solid walls and plastering onto same without using lathing, there being doubt about moisture coming through the walls and plaster. Yours and their minds can be relieved on this subject, moisture will not penetrate a solid wall if a reasonably wet concrete is used. A dry concrete I could not vouch for, and water may penetrate, but I doubt it if walls are of thickness previously described, and I firmly believe a solid wall is less liable to moisture penetrating than a hollow constructed wall.

Claims are made that owing to the different temperatures between inside and outside of walls, particularly in winter time, is cause for sweating. It is nothing of the kind, I have proven this by various kinds of buildings, all having varying temperatures, and all have shown perfect dryness inside, irrespective of temperatures and weather.

As to the cost of construction, there were 400 cubic yards of concrete in the walls and floors of the house, and taking into consideration the carpentering work, setting up framing, setting doors and window frames, and joists as the work progressed, the common labor, cement, sand and stone, totaled up to \$2,600.00, which would make the concrete cost \$6.50 per yard. I am informed that ordinary brick houses, with pressed brick face, costs from \$10.00 to \$12.00 per cubic yard. This would show a difference in cost of say \$4.00 per yard in favor of concrete, with the advantages in favor of concrete, it being a better fireproof material, and warmer house in winter, and cooler in summer.

In giving the above figures of cost of concrete,

been erected throughout the country proving not only an economy in cost, but also an ultimate economy by their permanence and small cost for maintenance.

The three spanned arch bridge at East Machias, Maine, of the Ransome System, is another example showing the beautiful, clean cut lines that may be secured without assistance of stone work by simply tooling the concrete the same as cut stone. It removes all chance of discolorations on the surface and produces a beautiful granular surface quite equal in appearance to that of masonry, and is applicable to most any kind of building. These bridges are erected with spans up to 150 feet, and by their strength and weight are able to resist the action of floods, to which iron and steel, due to their lack of weight, have succumbed in many cases.

The number of chimneys built entirely of steel concrete construction at less cost than brick, and with many advantages peculiar to itself is large enough to deserve considerable attention. They are monolithic in their character consisting of an inner and outer shell of concrete, free to move independently of each other. The inside shell, varying from 4 to 6 inches thick at the bottom to 3 inches at the top, is thus free to expand and contract at will with a temperature of the stack. The outside shell, varying from 8 inches at the bottom to 3 inches at the top, provides all the resistance necessary for wind pressure. These stacks have been built up to 180 feet in height and about eight years of service, in which no fire brick was used, has shown them to be the most

satisfactory form of chimney that can be obtained. The action of the heat of about 600 degrees and furnace gases seem to have no effect upon the concrete. The principal bars are placed vertically in the outer stack, and on the inner stack are divided equally between horizontal and vertical bars.

This view shows two sand bins and an elevator built entirely of steel concrete construction for the J. B. King Co., at Hempstead, Long Island. These tanks are about 30 feet in diameter and contain 1,140 tons of sand each.

This view shows the use of steel concrete construction for tanks for water and other liquids. This tank was built two years ago for the Baldwin Piano Works, of Cincinnati, Ohio, to contain 100,000 gallons of water and is covered with a fireproof floor to carry 600 pounds per square foot, intended to catch any falling weights in time of fire. The columns of the building extend through the tank and are surrounded by square collars made homogeneous with the tank to secure their independent action. Many of these tanks have been erected throughout the country for various purposes and of various designs, including large filtration plants and storage reservoirs proving in every case a most permanent form of construction requiring the least care and least expense of maintenance.

This view, looking down the stair well of a typical set of stairs to a power building in which the whole construction, including the hand railing, is of steel concrete construction. These stairs are supported at four points, that is at the top, bottom and two intermediate points in each of the ten flights and were erected in six weeks.

This view was taken of a set of iron stairs of Christ Church, Cincinnati, and shows the extent to which corrosion had gone before it was discovered. The webs had been eaten entirely through by corrosion and the flanges were laminated like the open leaves of a book that had become wet; these steps were called upon to support crowded congregations, and insure their safe entrance to the church. This view is of the concrete steps which replaced them.

The flexibility of steel concrete construction is very clearly exhibited in this view of the stair case erected for Mr. Wm. K. Vanderbilt, at his residence in New York. These double stairs are supported at five points, thereby imposing on the rest of the construction a comparatively light load for this very complicated kind of stair case. The finished marble was subsequently applied to form the treads, risers and railings. It was severely tested before its acceptance, as were almost all examples shown in these views. This test consisted of 3,300 pounds concentrated load and a drop test of 380 pounds falling 11 feet without more than a perceptible vibration.

Concrete stairs unquestionably offer a greater resistance to fire and corrosion than is possible of any system of steel or iron stairs with metal or masonry treads and risers and generally is much cheaper.

The Stadium at Harvard College, Cambridge, Mass., is the largest of its kind in the world, costing approximately \$200,000.00. The Cincinnati Base Ball Grand Stand is also similar building, both being of steel concrete construction. The footings, columns, floors and roofs, as well as the ornamental work all being a monolith. The Harvard Stadium has a seating capacity for 50,000 spectators.

The value of this system as applied to factory buildings is made quite evident by this example of the McDonald & Kelley Shoe Factory at Cincinnati. It is typical of factory construction of the most durable and economical style. It is essentially a skeleton form of construction consisting chiefly of columns, girders and floor slabs, with the walls filled in up to the height of the sills with brick. The rest of the space of the outside walls being given up entirely to windows which afford a maximum amount of light and therefore permits the building to be made much wider than with brick wall construction.

The interior view shows the character of the floor slabs and beams and gives an excellent idea of the advantages to be gained by this form of factory buildings. Several experiences have shown that this form of construction cost but comparatively little more than the best mill construction with iron columns and brick walls, the difference in some cases amounting to not more than 10 per cent. on the total building.

This view shows the stairs of this same factory which were built so as to be independent of the outside walls, being hung and supported only from the beams at the top and bottom of each flight.

It is natural that with the use of a system of comparatively recent date as steel concrete, that all constructions erected by it should be tested thoroughly to prove its efficiency. This custom of testing actual construction has been a large factor in convincing the many adherents to this system of its commercial and intrinsic value. The American Book Co. Building, erected by the Ferro-Concrete Construction Co., of Cincinnati, is one of the large recent works of concrete; it includes a set of buildings covering an area of 452 x 140 feet; it being four stories in height for factory building, and five stories in height for the main building.

The building was originally designed for mill construction with iron columns and brick walls, but when the cost of substituting steel concrete construction for the mill construction and iron columns showed an increase of approximately 10 per cent. on the entire investment, but with a large reduction in the rate of insurance, it was decided to use steel concrete. All of this building, except the outside brick walls and including stairs, chimneys, vaults, reservoir, tanks and a 160-foot stack, are of concrete. The different members have been subjected to many tests severely applied by the architects and owners and to trying conditions due to the storage of large quantities of material as the construction ages.

This view shows one of the tests made on one of its floors designed to support 200 pounds per square foot. One bay of the building for its full width of 70 feet by a width of 20 feet was made into a bin and filled with sand to produce a load of about 320 pounds per square foot, with deflections approximating $\frac{1}{8}$ of an inch over beams and floor. The load was allowed to remain for about two weeks before being removed, and during this time showed no variation in the deflection. A floor span chosen at random by the owner, figured to sustain 200 pounds per square foot, was subjected to the tests shown in this view. Two alternate bays, 20 x 15 feet, were loaded with a uniform load of 720 pounds per square foot and the net deflections were as follows: Girders (20-foot span) 5-64-inch, beams (15-foot span) 3-64-inch, floor slab (7-foot span) 3-64-inch. Alternate bays were loaded to produce maximum moments in the continuous action of the construction.

The test was conducted before a delegation of architects and engineers of Indianapolis. This building is now occupied by the American Book Co. and is filled with machinery of various kinds and a large number of heavy printing presses which seem to have no perceptible vibratory effect on the construction.

This photograph shows the manner of storing cement on the first floor of the main building mentioned above, the cement being stored about 12 bags high produced a load in the neighborhood of 600 lbs. per square foot over the entire floor.

The next view is of a complete stack which has been in use now for some time. No fire brick lining of any nature was used in this stack.

This view gives a very good idea of the character of work in the erection of this building. You will notice the perfect surfaces and sharp edges which are exactly as they came from the forms. Such board marks as existed are plainly visible and the appearance here shown was produced by the simple application of a water paint.

The great variety of application to which this material may be used, its ability to serve in the most complex form of engineering, as well as its ability to maintain its integrity of strength and resistance to nearly every form and combination of loading and stresses, has been perhaps nowhere better exemplified than in the successful construction of the sixteen-story skyscraper for the Ingalls Realty Co., of Cincinnati. The conception and execution of this work is the boldest and incidentally has proved one of the most successful works in the steel concrete construction up to this time. During its erection it suffered the most severe criticism and discouraging attacks by means of quite distressing predictions to the effect that it would fall down before the sixth or seventh floor had been reached, or be in the cellar before the roof was in place, or just naturally go to pieces, etc., which came from many sources from which one would expect more careful statements or considerate judgment. Then came the state-

ments that the columns would be so large as to be wholly impracticable, that the amount of steel used, or which would be used, would build a steel skeleton building without any concrete at all. When the building reached the roof, these arguments took the turn that the ultimate destruction of the building was a question of time. The fact of the matter is, that a most careful examination of every element of the construction from the foundation to the roof made by engineers fifteen months after the completion of the concrete, has failed to show the least sign of any weakness or imperfection or crack of any nature whatever. The columns were but a trifle larger in the lower stories than the best fireproof steel columns; this disadvantage, however, is more than offset by the gain of about 10 inches in the height of each story over tile and steel construction, as the concrete slabs are but 5 inches thick, while those of tile and steel would be from 12 to 15 inches. This saving multiplied through sixteen stories provided enough room for an entire extra floor. The amount of steel actually used in the building was less than 400 tons, including foundations, walls, sidewalks and vaults, etc.; the amount of concrete used was 4,000 cubic yards. As the building was 50 x 100 feet in plan and of about 1,200,000 cubic feet, it is a very simple matter to figure approximately how much steel it would require for a similar building with similar spans in skeleton steel construction. This view shows the building when it had reached the eleventh story and also shows the black paint applied to the columns before mentioned. It took 168 working days to erect this structure from the time it left the sidewalk until the roof was on. The main spans are 32 feet and the girders, columns, and walls were called upon to meet all the wind stresses and heavy loading imposed by heavy vaults and tanks ranging from 40,000 pounds to 320,000 pounds.

This view shows the character of the general construction consisting of slabs 16 feet square and 5 inches thick supported by girders of 32-foot span. These girders being monolithic with the columns partook of the nature of beams with partially fixed ends, the whole structure being considered elastic to that extent.

This view shows the upper floors during construction, the method of applying the steel, and of handling the concrete as well as its general consistency.

This view shows the first story stairs, but $3\frac{1}{4}$ inches thick from soffit to base of riser.

This view is typical of the stairs throughout the rest of the building. They are supported at but three points, top, bottom and angle and were otherwise built entirely independent of the walls.

This is the interior of the Ingalls Building, when completed, being the operating room of the Western Union Telegraph Co. This is the building after the concrete had been completed and before the terra cotta work of the top story had been put in place.

Though it may be some time before the lessons taught by the Baltimore fire are fully learned, one fact seems to be perfectly evident, and that is, that steel concrete construction, so far as the examples in this fire went, behaved remarkably well and as a whole much better than tile, and has proven beyond any question to be one of the most efficient fire resisting materials in construction. The unfortunate circumstances by which the use of water was eliminated from this ordeal, can not have very much bearing on the results shown there by reason of the standard tests that have been made under official bureaus which have afforded most satisfactory data on that point. The many tests that have been made under the auspices of various institutions, such as the New York Building Department, the Committee on Fire-Proofing at Columbia University, The Ransome Concrete Co., and others, have shown conclusively that the effect of fire of at least four hours duration at an average temperature from 15 to 1,700 degrees or more, the application of water applied to the concrete at the end of this time during its maximum temperature, does not produce any serious damage to the concrete or to the steel. At the most, the damage has consisted of pitting the surfaces of the concrete or in producing slight hair cracks which subsequent tests of severe loading have shown are not worthy of serious consideration. Some of these tests were made in direct comparison with tile construction and subject to identical conditions, with the result that concrete proved itself quite superior as a fireproofing and

steel protecting material. The character of tile construction has very materially improved in the last few years, but the recent fires not only in Baltimore but elsewhere have shown there is still room for improvement before it will have reached the degree of fire resistance claimed for it, and all of the evidence of the recent Baltimore fire bears out this fact. A great many prominent engineers have unhesitatingly supported it and many had gone so far as to say that in their judgment concrete stood the fire much better than terra cotta, and it does not take much evidence to convince an unprejudiced disinterested person that there is ample foundation for such judgment.

In dealing with this phase of the subject there is no desire to show in this paper the fire resisting properties or lack of them of any other system, except as may be necessary to justify the statement that concrete was afforded and successfully resisted a test in this fire which only a material of the best fire-resisting qualities could endure. In this connection it must be remembered that very sweeping claims have been made from time to time by advocates of tile, that not only was tile with steel the only material which was subjected to any serious test, but that furthermore concrete played no part as a fire resisting material.

This view shows one of the columns from the Junka Hotel which was dynamited to save the Government Building. These columns, we are told, were independent of any system of construction, other than the girders which they supported. It would seem reasonable to suppose that a material incapable of resisting fire, would go to pieces under the conditions involved in this case and as shown in this view, since it was evidently subjected to a large amount of inflammable material being deposited in the midst of a seething fire of the most intense heat; on the contrary the concrete as shown in this picture, and in other parts of the fire and as exhibited by a sample of it which we have here, have not seemed to have shown any appreciable damage due to the fire itself. The concrete does not seem to differ materially from any ordinary concrete, the aggregates being plain sand and broken granite or gneiss. It stands to reason that no construction is to be expected to stand dynamite as was applied here, but it is reasonable to suppose that concrete, which it is claimed is not fire resisting, would show marked signs of disintegration under this test. Everything of any inflammable nature was completely consumed, but you will notice in the view not only the sharpness of the corners of the concrete, but the little drippings which marked the cracks in the boards forms during its manufacture, are still in perfect condition and in fact were only chipped off with some difficulty. One could hardly ask for better evidence of the ability of concrete to resist fire than is shown here.

This is a view of the International Trust Co. Building, built of heavy brick walls, and situated in the very heart of a vast area of seething fire whose high temperature was kept up for many hours. The first floor and gallery was of steel concrete construction. All the buildings about it were completely demolished. The walls of the next building falling on the roof, crushed through the skylight to the first floor where it was stopped by the concrete construction.

The condition of the interior of this building after the fire is shown in this view.

This view shows the underside of the same floor and in the room reached by the door shown in the photograph, and stored paper, desks and documents were kept in as perfect preservation as though there had never been a fire at all. The heat to which this building was subjected is, however, hinted at in this photograph by the fact that the billet of hard wood fifteen inches thick, which was once imbedded in the brick work, just above and to the right of the doorway, was completely burned out, not leaving even a particle of its ashes.

This view of the annex to the Guarantee Title and Trust Co. Building, which it is said was so badly damaged throughout that it had to be torn down and that it came under the category of low buildings which did not offer a test of the fire resisting system. The building was once a brick and wood joist structure, but later the interior was removed and a skeleton construction of concrete columns, girders and floor slabs were substituted, and a light ceiling of concrete was placed under the roof. An examination of this building after the fire shows that there was no evidence of a greater heat being exhibited in any of the tall

buildings than appears in this building. However that may be, one would suppose that such heat as would crack, warp, bulge and seam an 18-inch brick wall, as were the walls of this building, was sufficient to completely destroy any material other than one calculated to resist the worst sort of a fire. The brick walls as shown in this view were so completely shattered throughout a long area, by the heat to which the building was subjected, that they were torn down because of their danger. Every particle of combustible material in this building was completely cindered just the same as in all the other buildings; typewriters, gas pipes and various forms of iron were twisted and warped into veritable junk. Of desks, tables, chairs and windows nothing remained but the screws, nails, locks and weights; the cast iron front of the building as well as its wall, was warped, twisted and broken in exactly the same manner as were the cast iron mullions of windows in the Continental Trust Building, and others. In fact the Maryland Trust Building opposite showed no evidence of a greater heat at any point than was shown here. Stories on the same level in this skyscraper as those in this building, showed the tile partitions entirely down or utterly ruined, the column coverings broken and the lower flanges of the terra cotta tiles broken off for large areas and the tile protection to beam flanges gone in many places. The appearance of the tile work of the second and third floors was not particularly different from this view of the Calvert Building, taken at about the eighth floor, and is very typical of the appearance of the ceilings of story above story of the Maryland Trust Building.

This view shows the real relation between these two buildings, and exhibits the curious fact shown throughout the fire that the leeward sides of the buildings suffered very much more than the windward sides. It would be pertinent to ask at this point that if there was not sufficient heat at the lower levels to offer a test to such a construction as concrete in these buildings, why it was that tile was so readily damaged at about the same level throughout pretty much the whole of the Baltimore fire. This view of the fire proofing of one of the columns of the Continental Trust Building on the third story level affords very much of the same sort of evidence, but here there were no pipes to push off the tile protection of the columns by their expansion, and the blackened condition of the column shows the direct attack received by the fire. The small vault shown in this view remained in fact and was subsequently torn out, leaving it as it appears here.

A view of the interior of the Continental Trust Building light shaft taken from the top story shows what was apparent on the spot that there was no marked difference in the temperatures between the top and lower stories, of this building, and that in fact the worst damage seems to have been done among the lower stories of which this view is a very good example. Taking it on the whole it does not seem that the above argument has any real foundation for claiming concrete was not subjected to practically as severe a test as was any other system, and the example given would seem to indicate that the evidence is to the contrary.

This view shows the interior of the first floor of the Annex. The detailed photographs of the columns of the third story, taken at random, show the concrete like that below to have been practically as perfect as when erected and that there was no fluffing or spalling of the corners or angles of either the columns or girders and the floors to be structurally as sound as others. The shrinkage cracks which occurred due to the character of the design offered no structural weakness as subsequent tests proved. The extremely light column and ceiling figured to bear from 10 to 20 pounds per square foot showed slight spalling at the corners of columns and beams and hair cracks in the thin ceiling, such as would be expected at some point under such conditions.

This view showed these columns and beams on the top story. The hanging parts are not to be confused with the concrete columns. Tests made upon these floors consisting of sections fully loaded up to 225 pounds per square foot without undue deflection are sufficient testimony that no damage occurred of sufficient importance to materially affect the floor or their structural value.

This is another of the low buildings of concrete construction, being in fact the National Bank of Commerce, with the floor, ceiling and balconies of steel concrete construction. The building consisted practically of three stories, and though the buildings on all sides of it and for a great distance back in the rear were completely demolished,

these floors and ceilings were used without any repairs for its reconstruction. Every vestige of combustible material, making up its furniture and fittings was completely consumed, and it has been published that melted coin was taken from this bank, offering ample evidence of the heat to which it was subjected.

This view of the Farmers' and Merchants' Bank had steel concrete for both first and second floors. These were put in by the Roebling Construction Co., with concrete consisting of one part of Portland cement, two and one-half parts of sand and six parts of steam boiler cinders. The third and fourth floor and roof were of ordinary wood construction. These quickly took fire and all the debris of the upper stories, consisting of heavy plaster partitions, timbers, radiators, plumbing fixtures and a 26x34x48-inch Hall safe from the fourth floor fell in upon the second story concrete floor, which successfully stopped them. This debris averaged a depth of four feet, weighing probably 250 pounds per square foot. Notwithstanding the unusually severe conditions to which this floor was subjected it was absolutely uninjured. The ornamental plaster underneath it and attached to it was not even cracked or in the least damaged, and all the glass globes attached to the ceiling are also unharmed.

This view shows the interior of the banking room after the fire. It is the kind of evidence, however, which is not confined to low buildings necessarily or to the Baltimore fire. It is the same evidence that has appeared wherever concrete has been subjected in a building to either fire or fire and water, and the instances are too many to enumerate in this paper, and the kind of argument which says buildings in which the concrete floors had remained in fact was not subjected to as great a heat as another, whose floor which failed by falling weights acted as a chimney in the Horne fire in Pittsburgh, can not be considered seriously to militate against the concrete since the ability to preserve its floors intact and thereby reduce the temperature is but one more advantage to be credited to concrete steel construction.

About eight years ago Mr. E. L. Ransome erected a factory for the Pacific Coast Borax Works, at Bayonne, N. J. This building was four stories in height and occupied an area 200x250 feet approximately. All the floors, walls, columns, beams and girders were of steel concrete construction, and the floors of about 25 feet span were figured for a live load of 600 pounds per square foot. Among other things it provided for sustaining a tank on the fourth floor, girders and beams weighing 83 tons. The roof, however, and its columns and beams were built of wood with the idea of substituting concrete at some future date. On this roof was supported a series of tanks, three of which weighed 18 tons, another weighing 33 tons, and a concrete steel dust collector weighing 45 tons. The boilers were fed by oil from the adjacent Standard Oil Works, and the bursting of one of their pipes flooded the first floor with oil. This took fire and the whole building was subjected to as severe a test of fire and water as probably any building has ever received. The fire spread rapidly from floor to floor by means of the hatchways and elevators, and the combustible materials stored in the building, created an intense heat, sufficient to completely fuse the copper in the various machines, and in one case to fuse bodies of cast iron together. The fire reached the roof and the tanks fell a distance of 14 feet to the concrete floor below. This floor not only stopped the tank, but incredible as it may seem, it stopped them without damaging the floor in any way, excepting at one point where one of the rectangular 18-ton tanks, falling in a conveyor punched it through a concrete slab and cracked the two adjacent beams. This photograph taken at this particular point, showing the valve protecting through the floor and shows the damage that was done. It cost considerably less than \$1,000.00 to complete the repairs to the concrete. You will observe the sharpness of the concrete edges of the beams and columns which are in perfect condition. When one comes to consider a weight of even considerably less than 18 tons, let alone 45 tons falling 14 feet on to an ordinary self-supporting floor of any construction, it is certainly remarkable that one should be found that could so successfully resist it as was shown in this case. By way of comparison many of you who are recalling the Horne fire in Pittsburgh will recollect that a water tank fell a story and sheared its way clear through eight stories to the basement, and wrecking about one-third of the building. This view of the building

adjoining the Pacific Coast Borax Works was wrecked also by a water tank at the same time its neighbor had its fire, and is but another example, though it can lay no claim to comparison because of its un-fire-proof condition.

In conclusion it may be said that the increased readiness with which this system of construction is being adopted and considered by those whose investments demand careful consideration of the question of fire-proofing, insurance and ultimate economy show that the qualities which have been set forth in this paper are being rapidly recognized.

Its wide application to every form of engineering construction and the experience gained through years of careful study and practice by prominent engineers, both here and abroad, involving the erection of countless buildings of every description, of miles of sewers, conduits and tunnels, and of a long list of bridges, reservoirs, tanks, towers, chimneys, storage elevators for grain, coal and other materials, have proved that it is deserving of this consideration.

It is the latest product of scientific research applied to improvement in construction.

It is receiving the attention of scientists, engineers and architects and commercial interest and enterprise the world over to-day, and there seems to be little doubt that the future for it seems very bright.

These views may be of general interest.

This view shows the flexibility with which concrete may be used to please the fancy of the architect and landscape gardener.

I am indebted to the Ferro-Concrete Construction Co., of Cincinnati, for a number of the slides shown you, together with information pertaining to them.

SALESMANSHIP.

BY C. L. JOHNSON.

Mr. President and Fellow Members: The success and long life of this organization depend upon the united and combined efforts of the manufacturer, salesman and dealer to work in perfect harmony. Salesmanship is practically the foundation in this organization, for salesmanship is the business of the world; in fact, it is all there is to world of business. The right to sell anyone, whether it be contractor or dealer, is not disputed, but the question of having a fixed policy in the sales department and protection to the dealer is all important, and a policy which admits of criticism by the dealer is a dangerous one for the manufacturer. Dealer and manufacturer alike have their rights and privileges, but neither one can get along without the aid of the other.

The salesman with good tact and diplomacy can as a rule bring the dealer and manufacturer together and straighten out all difficulties. He is supposed to be familiar with the situation from all standpoints and to have the confidence of the manufacturer, whom he represents, as well as the dealer to whom he sells. The position of the salesman is not to be envied, for he has much to contend with, and complications arise daily in which he has to use his judgment and discretion.

I know of no better school in business than what is generally known as the "road," for it puts you in touch with all classes of men and gives you an education that you can never obtain at the office, but no one actually knows of the many obstacles that have to be overcome. No one can realize the work that the traveling salesman accomplishes, unless he has been one of the Great Fraternity of Drummers.

The salesman, if he is a good salesman and a successful one, is the steam and a big part of the engine too, that makes business move, for wherever you see a successful cement, lime or sewer pipe plant, you will notice that they are represented by first class salesmen, who can be trusted and depended upon.

The salesman must be quick to think and to act and take in the situation rapidly and advise his people what is necessary to do in critical cases. Such a man is our successful salesman of to-day. He is well versed in the principles of this association and is anxious for its success, for he can see that the harmony and good will between dealer and manufacturer is absolutely essential for the good of all.

The first and most important principle of this association is that of selling to the dealer and dealer only; it is this principle that appeals to all first class salesmen in the building material line, for they realize the great possibilities it affords them in centering their undivided efforts upon the dealer, who would then hold the situation in his

hands. The dealer and contractor are both necessary to the success of any manufacturing plant. Many contractors do not stop to think of putting themselves in the dealer's place or the dealers in the contractor's place. On the other hand the salesman has to put himself not only in both places and realize the condition of dealer and contractor, but has to look out implicitly for the interest of his firm.

Those of you present who have been called upon to make a sale of such a character, where the contractor insisted upon buying direct from the manufacturer and the dealer threatening to boycott the manufacturer, if he did not confine his sales to him, will realize the position of the salesman. The dealer is a man who either rents, leases or owns the building he occupies, and makes his living by selling cement, lime, plaster, sewer pipe and other materials that enter largely into the construction of buildings, side walks, sewers, etc. All these many materials mentioned he has to carry in stock and keep a complete stock all the year. He owns horses and wagons, pays for the services of teamsters, and warehousemen saying nothing of maintaining an office force with bookkeeper, stenographer, clerks, etc. His expense is a permanent one for 365 days in a year, and if he doesn't receive his shipments promptly and deliver his goods as per instructions from the contractor, he is severely criticised. The contractor expects the dealer to furnish him material at all seasons of the year at a low margin of profit, for he knows as a rule just what the material costs. The dealer must carry the contractors' account as a rule for months and sometimes several years, before he can get his money, still the dealer has to pay promptly for all his material within 30 or 60 days. Now all this takes capital and a large one in many cases, especially in the cities where heavy contracts are being constantly let. The profit to the dealer is a small one in comparison to other lines of legitimate business.

The contractor is a man who contracts with either private or public individuals to execute certain work, such as the construction of a building or of a sewer or the paving of a street and other improvement work which requires building material. The contractor, like all the rest of humanity, wants to buy as cheaply as he can and wants to make all the profit possible off his contract, for oftentimes he is a loser on certain work, especially when he is unfortunate enough to encounter labor difficulties. Many a contractor, in order to secure city work, has to have the dealer act as his bondsman, which of course, puts the contractor under obligations to the dealer and naturally buys his material from him. Other contractors are more independent and do not require the dealers' service as bondsman and write the manufacturers direct for prices.

Unfortunately some manufacturers have an idea that the salesman should sell in every town and secure every contract they go after. It can't be done, for if each salesman obtained every contract he was instructed to secure, his plant could not fill his orders.

Some manufacturers will quote direct but the number is growing limited each year, for the best known legitimate Portland cement companies have representation in some dealer in every large city, and if they have not, request the salesman to interest the contractor in their brand and arrange with some one of the dealers to handle the cement, if contractors desire this special brand.

I have gone slightly into detail regarding the relative position of the manufacturer, dealer, contractor and salesman, and it is practically all up to the salesman to bring about a better and clearer understanding between all parties concerned, for he knows the situation, and if his firm has confidence in him, his advice will be taken.

The trade as a rule knows the traveling representative and during their business career never meet the men who are actually at the head of the sales department of a manufacturing plant unless the general sales agent has at one time been a traveler and solicited their trade. The salesman, knowing the trade and its peculiarities, should have charge of his territory completely, and let all inquiries and complaints be forwarded to him to avoid misunderstandings which cause too much friction and oftentimes complete separation between the manufacturer and dealer.

If salesmen of building material would but consider all the different phases of the situation in reference to having a fixed policy and that policy to sell to the dealer and dealer only, and arrange to have all contracts handled by him, they will then have accomplished the purpose for which this organization has so long striven to attain.

COMMON LIME, ITS USES AND ABUSES.

BY PETER MARTIN.

It seems to me that some one other than myself should have been chosen to present this subject before this meeting, as the making of addresses is not in my line. However, as your worthy secretary has been so persistent and would listen to no excuses, I will submit and give you some thoughts on the subject.

When we come to discuss the uses of common lime, we are led into a very broad field, and one that requires considerable study and research. Not only must we know something of mechanical effects, but the science of chemistry must be brought to our aid. From this it will readily be seen that unless one is fully conversant with an extensive laboratory practice with the element of lime, he will have difficulty in discussing a subject so broad in its nature and so far reaching.

Common lime is an oxide of calcium, a white, alkaline, earthy substance, obtained by calcining some of the various carbonates of lime, such as pure limestones, marbles and marine shells. It is brittle and easily pulverized and in its chemical composition contains forty parts of the metal calcium and sixteen parts of oxygen. In the calcining process heat drives out the carbonic acid and the lime remains.

There are few limestones which do not contain a greater or less quantity of sand and clay or of silicates of various bases mixed with the calcareous material. This natural condition of the substance from which the product is made gives rise to various conditions in the manufacture and use of the material.

The lime as prepared from various qualities of rock varies in character with the nature and amount of this foreign admixture. Limestone containing less than five or six per cent. of impurities yields a rich, or, as it is often called, a "fat" lime; with more than that amount the lime is "poor," and does not augment in bulk to any considerable extent when mixed with water. When the amount of silica, alumina, etc., in the limestone is increased to above 15 per cent. the lime from it begins to acquire the property known as "hydraulicity," or of hardening or "setting" under water. In this form the manufactured product is recognized as cement and in its preparation and uses undergoes an entirely different treatment from that of common lime.

The great consumption of lime is in the production of mortar, and for this purpose it has been used in construction by all modern and most ancient civilized nations. In the earliest masonry of which any remains have been found, as the Etruscan, that of the Island of Cyprus, and ancient Troy, walls were laid up with large stones without mortar, or with smaller ones packed in clay, but by the Egyptians, Hebrews, Greeks and Romans the use of lime for mortar was universal. In the manufacture of mortar from lime, the hydrate of lime is formed by the addition of water to quick lime. This is, in part, chemically combined with the lime and produces the first "setting" of mortar, subsequently by the absorption of carbonic acid from the air, it is converted into the hydrated carbonate. In the process of time a combination is also formed between the lime and some of the silica of the sand with which it is associated, and silicate of lime is produced. By this the strength of the mortar is still further increased. This progressive change has been ascertained by careful analysis of many samples of older and newer mortars. These have shown that in the older mortars, which in some instances are as hard as the stones they join, the percentage of silicate of lime is much greater than in those more recently made. Mortar made from ordinary lime "sets" in the air slowly since the absorption of carbonic acid and the consequent conversion of the hydrate of lime into the carbonate is by no means a rapid process. The hardening of the mortar depends in large part on the crystallization of the carbonate of lime around the grains of sand by which these are made to cohere firmly; hence a clean sand of which the grains are angular is of importance in forming a desirable mortar. This gradual formation of a silicate of lime; in other words, a form of glass, is the property which gives the remarkable hardness to very old mortar so often observed when old buildings are torn down. This hardness will not be present, however, unless good, quartz sand is used in making the mortar, which is by no means always the case.

The notion is commonly entertained by architects and masons that the best lime is produced from the purest carbonate of lime, and statements to that effect will be found in many books which treat of this subject. This theory, however, has

been abundantly proved to be a fallacy, for it has been shown that nearly all the most extensively used and highly esteemed limes contain a large percentage of magnesia. Magnesian limes are preferred by masons, because as they say, they are "cooler" and set more slowly. The pure lime is, in their language, too "hot" and "quick."

A similar fallacy prevails in regard to the use of magnesian limestones for fluxes in metallurgy. It is generally believed that pure limestones make the best fluxes, but this is a mistake, as abundant experience has shown that magnesian limestones are quite as well adapted to this use as those which contain the carbonate of lime only, some of the best lime in this country is made from stone obtained along the Hudson river, much of which is almost pure dolomite.

While by far the most extensive use made of lime is as the chief ingredient of mortar, yet there are many other purposes to which it is applied when a strong and cheap base is desired. It would require more time than the limits of this paper will allow to give a full treatment on mortar. So much can be said on this line that it might well be made the subject of a special paper, without combining with any other topic. Hence, I will take up some of the other uses of lime.

We find in the last few years a use of lime in the building trades which bids fair to become a widespread industry and to increase the use of lime. The manufacture of lime-sand brick is rapidly coming to the front, and as the product becomes better known, its use will become more universal. The crushing strength, elasticity, and other elements considered important in a building material are found practically equal to that of sand stone. For the manufacture of lime-sand brick hydrated lime has been found to give the best results. I am of the opinion that the next few years will witness great advancement in the use of lime in this connection.

Another place in building operations in which lime can be used with great advantage is in the manufacture of cement blocks, and concrete for buildings. The use of cement blocks and concrete for buildings is rapidly assuming great proportions, and the lime manufacturer should be able to demonstrate that a certain per cent. of lime added to the cement is of benefit in the manufacture of these blocks, not only from the standpoint of economy, but also because a better and more substantial job can be made. For this use hydrated lime is preferable. It is well known that a certain admixture of lime with the cement, depending, of course, upon the nature of the lime and the cement, renders the block less susceptible to the transmission of dampness through the wall built from these blocks. If this matter were taken up and discussed by the manufacturers of lime, I have no doubt that an increase in the use of lime for this purpose, and increased business would follow.

I believe, also, that the use of lime in the various "hard wall" plasters should be examined into and investigations made. It seems to me that the hydrated product could be used in this connection with great advantage. The use of "hard plasters" is in great favor with architects and builders, and we should endeavor to keep up with the procession.

Leaving the use of lime in the building trades we come to other uses scarcely less important. The limits of this paper will not permit any extended discussion because such discussion would involve detailed chemical explanations. I can merely enumerate these various uses, leaving the elaboration to the chemist.

Lime is used extensively in the manufacture of other products, such as the various forms of glass and the manufacture and refinement of sugar. For these purposes a good, clean lime must be used. A large amount of lime is used by straw board and paper mills for the purpose of refining the pulp and removing therefrom all objectional matter. It is used also in fertilizer works, in magnesia and asbestos fireproofing, in the pickling vats of steel and tin plate works, in the purification of water, in the manufacture of soap, gas and oil purification, as a carrier of chemicals, particularly the active agents of acetic acid and bleaching powder, as a flux in the separation of metals, from their ores, in the manufacture of ammonia, as a disinfectant, in the processes of tanning hides, in the manufacture of the caustic alkalis, and, indeed in many other places which, as I have said, more properly belongs to the science of chemistry.

There is another use of lime which we should recognize and endeavor to impart more knowledge and thus give a wider field for our product. Lime is of great importance in agriculture, and is used in various forms, both separately and in combina-

tion with various other substances in artificial and farm-yard manures. It is a constituent of some of the salts in all the excrements of animals; the ash of nearly all plants contains it in some form, and it is furnished to the soil in the products of their decomposition. One of the principle agricultural uses of lime, however, is not alone to supply the growing plants with their needed constituents, but to act upon the soil and cause it to unlock its riches to them. For this purpose it is applied usually in the form of freshly slaked hydrate, which, acting upon the mineral matter, causes decomposition of vegetable matter. Soils which are rich in feldspathic minerals, or those containing silicates of potash and soda, are particularly benefited after they have been worn by the application of caustic lime, which acts by combining with the silica, forming a silicate of lime and liberating the alkali which is now free to enter into the composition of the growing plants.

Having thus given some of the uses of lime I now come to the second division of my subject, the abuses of lime.

The first of these abuses is improper burning. This is effected in two ways: It may be overburned or it may be underburned. When lime is overburned a large amount of waste is caused for the reason that the outer portion, or layer, of the stone is burned too hard, thus turning this layer into an insoluble scale, leaving it in such a condition that it will not be dissolved in the water used for slaking.

When lime is underburned a large amount of core is contained inside, but underburned lime, the core being removed, will have less waste than the overburned. An underburned lime is always preferred by dealers because it slakes more quickly and contains less waste outside of the core. As these wastes are sometimes considerable it is very important that the manufacturers use every precaution to get their lime burned right.

The second abuse is, improper storage and care. It is of little benefit to manufacture good lime if the dealer allows it to deteriorate and become useless from improper care. To care properly for lime it should be kept in a storage room free from dampness, and, as far as it is possible, the air should be excluded. Lime exposed to dampness and air soon loses its good qualities, and often the manufacturer is blamed when the entire fault is in the want of proper storage and care.

The third abuse is, improper slaking. The method of slaking lime varies in different localities and by the different limes; hence no definite rule can be given. Take a high carbonate of lime. It is absolutely necessary to give it plenty of water in order to keep it from burning, and, with some limes, continual stirring with a hoe is required. A dolomite lime should be slaked in a different way altogether. The lime should be put in a mortar box first, then it should be started to slake with water, gradually adding more water until all the lime is thoroughly slaked. It is not absolutely necessary to stir this lime with a hoe, but it should always be kept under water until it has gone through the slaking process. After this stir it thoroughly and add water and sand to bring it to the desired state for use. The writer is of the opinion that the less dolomite lime is stirred the nicer and cleaner it will slake, and the less waste it will produce. There are some dolomite limes that can not be burned by the slaking process. The lime slaker who would likely make a good slake of a high carbonate of lime may spoil a dolomite lime in slaking it, or vice versa. Each section and each man has his own ideas regarding the slaking of lime, but in many cases the lime has been condemned by the workman because he did not know how to make a successful slake of that particular lime, not being accustomed thereto. The lime should be studied and the slaking should not be blindly done.

Fourth, lime should not be used too soon after slaking. Very often in these days the lime is used before it has had time to slake thoroughly. When this is done the lime will not mix evenly with the sand as has often been observed in old pieces of mortar. When the mortar is broken we often find particles of various sizes which are pure lime and have not been thoroughly incorporated with sand. This is due to the fact that the lime has not been given enough time to slake. It may have been dissolved, but the slaking process is incomplete. In foreign countries lime is slaked from three to six months before it is used, and the longer the lime is seasoned before it is used for building purposes the better its cementing qualities will be, and the stronger the mortar.

Fifth—Improper mixing. Lime should be thoroughly mixed with good, sharp sand and stirred until every particle of the sand is covered or incorporated with the lime. As to the proportions of each to be used, it is very difficult to say, because it depends upon the nature of both the lime and sand used. As the sand is a local product the mechanic must make the proportions for the mixture as his judgment and experience has found best for his locality; but one thing is sure, there must be thorough incorporation.

In conclusion, I will say that I have attempted to give in a brief manner an idea of the subject assigned me. As I intimated in the beginning of this paper the subject is so broad and the field so extensive that an entire library might be written about the uses and abuses of lime. Every day new points are arising and new methods coming into practice. To keep pace with them is the work of the manufacturer, and if this paper has given any aid in this direction, my efforts have not been in vain.

EXHIBITS AT CLEVELAND MEETING.

Quite an interesting feature of the meeting was the exhibits. All of these except the displays made by the three block machine companies were made in Room 101, on the first floor of the hotel. The exhibits of the block machines were in adjoining apartments, each having a room to itself. One room was too small to accommodate all who wanted space, and as a result some of the displays did not appear to as great an advantage as they would in more commodious quarters; but W. G. Beck and his able assistant, C. W. Fitch, were very just and courteous to all who wanted space, and there were few complaints heard. Mr. Fitch deserves the warmest praise for his activity in helping exhibitors in every way possible. He was untiring, and assisted with his hands as well as his head. In installing an exhibit by the General Fireproofing Co., of Youngstown, Ohio, Mr. Fitch sustained a painful accident in the mashing of the fingers of his right hand by a big cement block. But as soon as the injured member was bandaged he went about his work as energetically as ever.

The exhibits were arranged all around the walls of the room, and in a line running lengthways through the center. The walls were made use of and decorated with many pictures and printed advertisements. The exhibits, in character, ran all the way up from illustrated pamphlets and photographs to complete displays of the articles manufactured by the various firms, some arranged as for practical use.

The Atlas and the Castalia Portland Cement Cos. had their displays side by side, both being quite complete and handsome. On the right of the door as one entered was the exhibit of the Furman Construction Co., of New York and Detroit. Their ribbed sidewalk, multi-colored, non-fading tile and reinforced cement, shingles made a most attractive showing. H. T. J. Furman and Charles Roe presided.

C. A. Hummel, G. A. Babcock and L. A. Rounds had charge of the display of the Philip Carey Manufacturing Co., of Cleveland, with shops at Lockland, Ohio. This exhibit consisted of the company's magnesia cement roofing with its patent lap, and which they say can be applied to any old roof with good results. A display of much the same character was just across the room, being that of the National Roofing Co., of Tonawanda, New York.

The Robinson-Graves Sewer Pipe Co., of Urichaville, Ohio, had a small but attractive display. Adjoining it was the Queen's Run Fire Brick Co.'s exhibit, whose plant is located at Lock Haven, Pa. L. C. Andrews had charge.

The Imperial Clay Co., of Cleveland, had a display of impervious stiff mud shale products in charge of W. R. Worley. The Youngstown Iron and Steel Roofing Co.'s exhibit, of Youngstown, Ohio, was much and favorably commented upon. Following is a complete list of those who had exhibits:

American Fire Brick and Clay Co., Mineral City, Ohio; The Scioto Lime and Stone Co., Delaware, Ohio; Diamond Portland Cement, Middle Branch, Ohio; East Ohio Sewer Pipe Co., Irondale, Ohio; Municipal Engineering and Contracting Co., Chicago, Ill.; Star Portland Cement Co., Siegfried, Pa.; J. B. Molyneux, galvanized corrugated wall ties, Cleveland, Ohio; Jamestown Paint and Varnish Co., Jamestown, Pa.; Toch Bros., R. I. W. Damp Resisting Paint, New York City; Alma Cement Co., Oregon and Wellston, Ohio; Dexter Port-

land Cement Co., Samuel French & Co., sole agent, Philadelphia; Darlington Brick and Manufacturing Co., Pittsburg, Pa., and Cleveland, Ohio; The Ohio Mining and Manufacturing Co., Shawnee, Ohio; The Stowe-Fuller Co., fire brick, Empire, Ohio; National Fire Brick Co., Cleveland, Ohio; Aetna Portland Cement Co., Fenton, Mich.; Grand Rapids Plaster Co., Grand Rapids, Mich.; V. H. Park & Sons, builders' supplies, Decatur, Ill.; The Struthers' Furnace Co., Portland cement, Struthers, Ohio; Stewart Iron Co., Portland cement, Sharon, Pa.; Alsen American Portland cement, 45 Broadway, New York City; Nelson Sewer Pipe Co., Nelsonville, Ohio; Massillon Stone and Fire Brick Co., Massillon, Ohio; O. D. Levering, wall ties, Cleveland, Ohio; Castalia Portland Cement Co., Pittsburg, Pa.; Atlas Portland Cement Co., New York City; Queen's Run Fire Brick Co., Lock Haven, Pa.; Whitehall Portland Cement Co., Philadelphia, Pa.; Western Cement Co., Louisville, Ky.; General Fireproofing Co., Youngstown, Ohio; Houston Bros. Co., whalebone wall ties, Pittsburg, Pa.; Youngstown Iron and Steel Roofing Co., Youngstown, Ohio; Robinson-Graves Sewer Pipe Co., Urichsville, Ohio; Phillip Carey Manufacturing Co. of Cleveland, Ohio; Vulcanite Portland Cement Co., Vulcanite, N. J.; Furman Construction Co., New York and Detroit; Auburn Concrete Machinery Co., Auburn, Ind.; Standard Sand and Machine Co., Cleveland, Ohio; Winget Concrete Machine Co., Columbus, Ohio; H. W. Johns-Manville Co., asbestos roofing and Keystone hair insulator, Cleveland, Ohio; Imperial Clay Co., Cleveland; Sandusky Portland Cement Co., Sandusky, Ohio.

NOTES OF THE MEETING.

Lawson Moores of Cincinnati couldn't stay away. Grandpa Leslie of Philadelphia is soon to go to Europe.

John B. Campbell of Louisville, Ky., is a live plaster man.

J. M. Black of Fairmont, W. Va., looks like a real general.

Camm of Germantown is the ladies' man of the meeting.

Chairman Ed Roberts is having cement tile put on his roof.

Among the absent was our old friend Dingley of Syracuse, N. Y.

Sir Richard Kind, "papa" of the N. B. S. A., is the same kind Richard.

Ralph Peverle, the "Old Saylor" from New York, left his overgaiters at home.

Your Uncle Joe Loughman of New York is full of tales of yore, but still up to date.

Treasurer G. N. Thayer came late, but his balance sounded good when he read it.

The iceman, Ed Walton of Youngstown, is a reality. He came in the last load of ice.

Col. Cobb of St. Louis has sued out a peace warrant against the veteran from Detroit.

Jas. Leenhofs of Mushroom & Stucko fame, presided with dignity at an Irishman's wake.

Urschel of "White Enamel Finish" fame, has become a builders' supply man in Toledo, O.

H. E. Culver, the Port Clinton, O., retarder expert, mingled among his old plaster friends.

Edward Bogt of Milwaukee reminds one of Mortar Colors as he explains how they do it.

N. F. Rouse of the Robinson Clay Products Co. says sewer pipe and wall ties do not mix well.

L. G. Powell came home to see mother. He says Cleveland is about to be a suburb of Toledo.

D. J. Kennedy of Pittsburg is building himself a new home. It will be one of the Smoky City's best.

Thomas D. Cone, the man who has done much to advance the interests of hydraulic lime, was with us.

A. H. Lauman of Pittsburgh, Pa., expert hydrated lime man couldn't believe that this is a play time.

Harry W. Classen of Baltimore, Md., is the youngster of the bunch but a coming president of the national.

J. B. Molyneaux & Co. has something unusually unique and handy in a wall tie. Cleveland, O. is their home.

The Buffalo entertainment committee of 1904, Ross, Reeb, Calkins et al, blew in with an extra lot of enthusiasm.

The belated shipment of the Queen's Run fire brick exhibit finally came to hand and B. F. Andrews is happy.

"The early bird etc.," yet says Haas of Houston Bros. Co., Pittsburg, we are long on whalebone wall ties.



SOME VIEWS OF THE EXHIBIT FEATURE.

E. H. Fishack of the Consumers Gypsum Co. of Port Clinton, Ohio, is South on the lookout for better health.

Everybody was pleased with Newton D. Baker's bright remarks at the opening session of the convention.

Billy Holst examined the Northwest recently. He likes Toledo best since all his neighbors will come to the meetings.

Ed Hunt interested many yesterday in his exhibition of how a check could be raised and the means to prevent it.

"Pa" Prentice says that Castalia is the "onliest," but until his ad appears in Rock Products we will not agree.

Foster of Chicago is of the opinion that young ladies of one year old are of more value than cement mills. We agree.

The portly Van Allen says they have to show him before he believes Michigan sewer pipe does not beat the world.

Chas. Wade of Jonesville tells us "Omega" Portland is more popular than ever. Jonesville is the P. O. in Michigan.

Col. Bradley's wife is interested in getting a souvenir spoon. When it is raining soup the colonel generally has a fork.

Earl B. McDowell of the Winget Concrete Co., says he misses some of the excitement of the Indianapolis convention.

W. E. Shearer is the new eastern sales agent of the U. S. Gypsum Co. at Cleveland, O., succeeding President S. L. Avery.

From far away the Kaw we have McCutcheon and Gorsuch, both great association men. Kansas City never does send slow ones.

H. R. Beck, formerly with the American Sewer Pipe Co. at Jackson, Mich., is now with the Chicago Sewer Pipe Co. at Brazil, Ind.

That illustrious gentleman, J. A. Fairleigh of Louisville, Ky., says cement blocks made of natural cement are the real ones.

George L. Burrige of the "Newago Portland" Grand Rapids, Mich., presented the editors with an envelope opener. There are others.

George B. Christian, Jr., says the senior is much better after a long siege, and we are sure the Democrats of Marion, O. are happy.

George Gegnagle of Dayton, O., is of the opinion that J. W. Eichelberger is one of the best fellows who sells builders' supplies.

Albert Moyer, the Vulcanite general sales agent of Harlem, advocates exporting cement to Blackwell's island and other islands of the water.

J. O. Freeman, G. S. A. of the American Sewer Pipe Co., has Manila and South Africa orders in his pockets, thanks to Rock Products.

G. S. A. Kimball of the "Atlas Portland" New York, is fully persuaded that he would go to the Philippines rather than miss this meeting.

A man said Charley Camm would make a good politician as he always has a cramp in the hand, owing to the friendly grasp he gives his many customers.

H. E. Kendrick of the Scioto Lime & Stone Co., Delaware, O., got here a little late, but bestirred himself and arranged a very attractive exhibit in Room 101.

Say but St. Louis is popular when it comes to officers of the association, but they are so modest. You wouldn't think so if you met Col. Cobb or our own Willis.

The Sandusky Portland Cement Co., of Sandusky, O., is very capably represented by P. B. Beery, who certainly has the knack of interesting spectators in a display.

Messrs. W. E. Henderson and John A. Reeb are the only Canadians present at the meeting. Mr. Reeb has the distinction of being the only orator in the plaster business.

President Harding of the Booneville Cement Co. of Philadelphia, Pa., talks as intelligently on the manufacturing end as on selling more than his company produce in Star Portland.

Chas. Warner, president of The National Lime Association, and Chas. C. Bye, secretary Chas. Warner Co., represented Wilmington, Del., and you know the representation was a good one.

C. H. Little of the C. H. Little Co. of Detroit was among the first arrivals. Mr. Little was first president of the National Builders' Supply association, and has never been allowed to retire from the executive committee. Evidently the members of the organization know when they have a man who understands how to further its interests and does so.

Sickness at home took Mr. Burrige of New-
wago away from the meeting and friends very
suddenly.

E. B. Stanley, Clinton, N. Y., was on hand,
notwithstanding he lost his home by fire just
a week ago.

Geo. Heppenstall of Heppenstall & Marquis
of Pittsburg, Pa., is getting quite a reputation
as a life saver. He is always ready with a
helping hand.

The territory covered by the delegation was
very great. The leading builders' supply in-
terests from Kansas City to the Atlantic ocean
were well represented.

Col. C. W. S. Cobb says it is hard work to
keep up with Rock Products, and that the next
thing he expects to hear is that they are getting
out an edition every hour.

The Crescent Brick and Supply Co., of Brooklyn,
N. Y., has been capitalized at \$25,000.00. The di-
rectors of the new organization are: J. O. Coen,
E. S. McKnight and L. H. Bishop, of New York
City.

Mr. Charles F. Murray, the brick and stone con-
tractor of Homestead, Pa., has recently secured
several large contracts for brick, stone and concrete
work. He is likewise closing a number of con-
tracts taken during the past summer.

The Philip Carey Manufacturing Co. of Lock-
port, O., are giving away a very handsome sou-
venir in the shape of a leather pocketbook.
Those fortunate enough to get them are ex-
citing the envy of others by flashing them on all
occasions.

J. M. Trout, of Landisville, Pa., who owns
large sand quarries in that locality, has recently
erected a large warehouse for sand storage during
the winter months. This was found necessary
owing to the fact that quarrying sand during cold
weather was almost impossible.

Mrs. John A. Kling was "it" on Tuesday with
the ladies. There were all kinds of gibes and
thrusts during that car trip, but every lady said
she was a princess and knew just how to make
every one happy. They all agreed that Mrs.
Kennedy was the souvenir fiend.

Caleb E. Gowan of the Kelly Island Lime &
Transport Co., Cleveland, O., has recently pur-
chased a half interest in the Mitchell Lime Co.
of Mitchell, Ind., and an interest in the Western
Lime Co. of Huntingdon, Ind., so it was "rumor-
ed" in the lobby of the hotel yesterday.

Experiments carried out by Robert Job, of the
Philadelphia and Reading railroad, on the dura-
bility of various paints, indicated that very fine
grinding of material was a strong factor in the
durability of the paint, those which had the finest
particles showing the greatest durability.

"Our Sammy" is the non' of S. J. Vail, of Chi-
cago, he that is so fond tho' of referring to White-
hall Portland. He is flanked by Sales Manager
Green of Philadelphia, Pa., who insists on
using the bath tub, however, his hobs Chicago
manager is somewhat chary on that account.

E. F. Hunter, of H. & E. F. Hunter, was among
those who came early. Mr. Hunter's company
has branches in Chillicothe, Henry, Edelstein,
Spartan, Winchester, Lacon, Chapin and La
Salle, Ill. The main business is lumber, but at
nearly all these places other builders' supplies
are used.

The ladies present at the meeting were: Mrs.
Edward M. Baltes, Ft. Wayne, Ind.; Mrs. Fred
Goepfer, Indianapolis, Ind.; Mrs. C. H. Classen,
Baltimore, Md.; Mrs. H. B. Lyman, Lafayette,
Ind.; Mrs. Walter T. Bradley, Philadelphia, Pa.;
Mrs. D. J. Kennedy, Pittsburg, Pa.; Mrs. J. A.
Fairleigh, Louisville, Ky.; Mrs. George N. Mc-
Alarnay, Wilkes Bend, Pa.; Mrs. E. H. Gibbs,
Mrs. Elihu Harpman, Akron, O.; Mrs. A. Kind,
Toledo, O.; Mrs. F. M. Hartman, Mrs. Charlotte
Vogt, Mrs. W. A. Pardee, Mrs. C. L. Johnson,
Cleveland, O.; Mrs. Whitmore, Mrs. Tom Palmer,
Akron, O.; Mrs. Howard McCutcheon, Kansas
City; Mrs. Alfred W. Thorn, Buffalo, N. Y.; Mrs.
J. M. Hoover, Pittsburg, Pa.; Esther E. Kling,
Jennie A. Harris, Alice de Wolf Vieta, Emma
Betts, Cleveland, O.; Mrs. A. Brewster, Akron, O.;
Mrs. Clarence Howland, Akron, O.; Mrs. W. T.
Akers, Mrs. F. M. Harpman, Akron, O.; Mrs. E. F.
Gregg, Geneva, O.; Mrs. O. C. Maurer, Toledo, O.;
Mrs. Charles Schmutz, Youngstown, O.

Clay.

Wisconsin Clay Workers' Convention.

The fifth annual convention of the Wisconsin
Clay Workers' Association met at Manitowoc, Wis.,
on February 23 and 24. There were over 100 de-
legates in attendance from various parts of the
state. The convention was called to order at
10:30 o'clock on the morning of the 23rd, and an
address of welcome was made by Mayor W. G.
Kemper, of Manitowoc, which was responded to
by J. W. Hinkley, of Green Bay. This was fol-
lowed by the annual address of President G. W.
Kennedy, of Manitowoc. There were a number of
other papers read by members on various impor-
tant subjects pertaining to the clay industry.

A banquet was held at the Williams House, on
the evening of the 24th, which was tendered by
local brick manufacturers, and was largely at-
tended and proved a most enjoyable affair. The
following officers were elected for the ensuing
year: President, Oscar Wilson, Menominee; vice
president, Clifford Chase, Milwaukee; secretary,
J. G. Hamilton, Grand Rapids; treasurer, Peter
Zimbal, Sheboygan.

The next convention will be held in Menominee
in 1906.

Progressive Illinois.

At the Illinois Clayworkers' Association con-
vention on January 11, Professor C. W. Rolfe, of
the University of Illinois, read a paper entitled,
"Shall the University Establish a Clay Labora-
tory, Inaugurate an Investigation of the Clay Re-
sources of Illinois, and offer a course in Ceramic
Engineering." It was full of practical sugges-
tions, became the real great feature of the meet-
ing, and resulted in a resolution requesting the
legislature to make the necessary appropriation to
provide for the support of a department in the
College of Science to investigate fully and publish
accurate information as to the value of the nat-
ural resources of the State as of interest to clay-
workers. The plan is a practical one, and has
been well proved out at several other progressive
institutions of learning who have caught up the
great modern idea of practical application of prin-
ciples to progress. Similar plans have long been
used with great success in regard to the different
agricultural interests, and it is hoped that this
practical idea may be extended to cover the stone,
cement, lime, plaster and other industries as well,
so that the visible results will cover the whole
field awaiting for development.

The Uniform Brick Co., of New York, N. Y.,
has been incorporated with a capital stock of
\$200,000.00 to manufacture brick. Henry Kopperl,
Samuel Gordon and H. W. Schlesinger, all of
New York, are the incorporators.

Fire clay has been found near Tulsa, Ind. Ter.,
in large quantities. If it proves as valuable, after
a thorough test, as is believed it will, it will be
used in the manufacture of fire brick and pottery.

The Krummel & Buechner Fire Clay Co., of St.
Louis, Mo., has been incorporated with a capital
stock of \$2,000.00, all paid in. The incorporators
are: William Krummel, William Buechner and
William G. Buechner.

An Abundance of Clay.

MONROETON, PA., February 10.—J. F. Parks
writes us: "I send you an analysis of a clay which
is here in abundance, there being 100 acres. It
is on the side of a hill not forty rods from a rail-
road; adjoining it is a very fine sand bed of sev-
eral acres. I think these will bear investigation,
as they can be bought reasonable. If you will give
the above space in your columns I will cheerfully
answer all communications."

Analysis of Clay.

Moisture 4.73 per cent.; silica, 68.21 per cent.;
alumina, 16.67; oxide of iron, 6.99; lime, 0.66;

magnesia, 1.55; titanic oxide, 1.37; total, 100.18
per cent.

F. A. Genth, a chemist at Philadelphia, writes
of this clay:

"A sample, moulded to a brick and burnt, gave
a hard, fine grained, mass (very slightly fused on
its edges—hence it is unsuitable for fire bricks),
but will do for earthenware, pottery, bricks, etc."

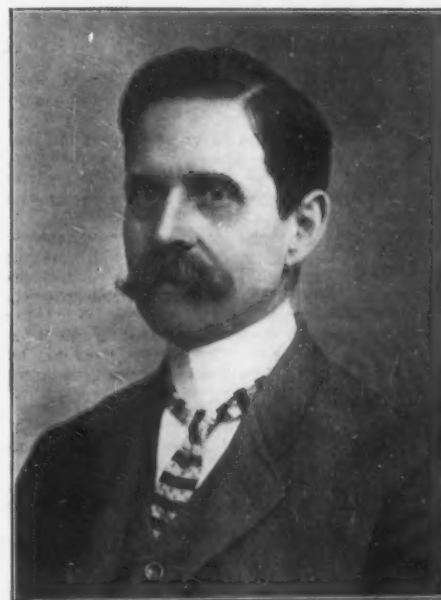
Fire Clay in Colorado.

DENVER, COL., February 14.—A number of local
men will develop a mountain of fire clay which
lies near Calhan, in El Paso County, on the Rock
Island railroad. This clay is said to be superior
to any other deposit known except one in New Jer-
sey. A company has been organized with a cap-
ital of \$1,000,000.00, and will shortly be incorpo-
rated. The officers will be: W. A. Pittman, of Mar-
ion, Ind., president; Theodore Marx, of Denver,
vice president; Ethelbert Ward, of Denver, secre-
tary; A. J. Spengel, of Denver, treasurer. The
company will be known as the Colorado Fire Clay
Co. This clay can be worked with small expense
as it is easy of access. Operations will begin in
the near future and the outlook for the company
is encouraging.

OBITUARY.

EDWARD ERNEST WORTHINGTON.

Was born in Toronto, Canada, September 29,
1856, educated at Upper Canada College. Having
a longing for the sea, in 1892 he entered the em-
ploy of Ismay, Imry & Co., of Liverpool, and served
five years as midshipman on their sailing ships,
during which time he made many voyages to



ED. WORTHINGTON.

South America, India and San Francisco. In
1877 he returned to Toronto with Captain's pa-
pers. He immediately entered the employ of his
brothers, James M. and George H., known as
Worthington & Sons, with head office at North
Amherst, Ohio.

He was married at Toronto April 3, 1878, to
Miss Zillah O. Myles, who survives him with one
child, Zillah, now ten years old.

In Ohio he learned the stone business thoroug-
hly, and in 1881 became the Western manager of
Worthington & Sons' business with headquarters
in Chicago. He resigned in 1893 to accept the
presidency of the Consolidated Stone Co., of In-
diana, with which company he remained until
January, 1901, when he resigned and organized
the American Quarries Co., of Indiana (now
merged into the Perry-Matthews-Buskirk Stone
Co.), of which he was vice president and general
manager until failing health compelled him to
retire from business two years later.

In 1903 he moved from Chicago to Toronto
where he departed this life on January 20, 1905.
He was a Knight Templar and Mason of the 32nd
degree.

Quarries.

The National Quarry Owners' Association.

Meets Semi-Annually.

D. McL. McKay, Chicago, Ill. President
S. M. Hall, Bucyrus, Ohio First Vice President
Chas. Pfeiffer, St. Joseph, Mo. Second Vice President
B. F. Froney, Jacobsville, Mich. Third Vice President
E. H. Delebaugh, Louisville, Ky. Secretary-Treasurer

Official Organ, ROCK PRODUCTS.

INDIANA OOLITIC LIMESTONE.

BEDFORD, IND., March 2.—All indications at present point to a very busy season both in sawed and rough stone. Cut stone contractors are figuring more work for this season than they have ever had in their drafting rooms before, and a number of good contracts have been awarded. Eastern business will call for large quantities of all kinds of stone for this year, and the demand from the South will also be large. Everybody in and around Bedford will have all they can do as soon as the weather will permit.

While there is little or no actual work in the quarries, every one of the cut stone establishments is at work, some putting the finishing touches in repairs and improvements in anticipation of a big year's work. Even so early as this in the season a few of the concerns are working overtime, and the prospects are bright for all the work the combined mills and quarries can handle in the coming season.

A prominent cut stone contractor and quarryman said: "Your last issue was very interesting to the Bedford stone men. The stone cutters see that their interests are identical with the interests of the cut stone contractors in this district. Other materials and other places are bringing the pressure to bear upon them. They are a clear-headed lot of men and will act in a way that will redound to their own interests."

Joint Meeting of the Stone Clubs.

An invitation from the Monroe County Stone Club to the Bedford Stone Club for a joint meeting was sent and accepted, and a busy meeting was held at Bloomington on February 20, at the

Bowles Hotel. Matters pertaining to quarrying, labor, shipping, etc., were discussed, and a general good feeling prevailed. Many means for bettering conditions in the stone trade were discussed, and finally recommended. It is believed that much good will come to the oolitic stone producers through such meetings, and it is hoped that more of them will be held hereafter. Every operator who attended the meeting expressed himself as being highly satisfied with the way matters of interest were discussed. Operators are getting next to each other on some vital points.

BLOOMINGTON.

BLOOMINGTON, IND., March 2.—The principal item of interest in this district and the chief topic of conversation among the stone interests is the very interesting meeting which was held at the Bowles Hotel on Monday, February 20. Nearly every company operating in Lawrence county was represented at the meeting, as well as every concern in Monroe county. It was a truly representative meeting of the entire oolitic limestone interests of Indiana. The utmost cordiality and good feeling was displayed on every hand and the meeting was of considerable benefit and satisfactory to all. Every stone mill in this county is at work, and most of the quarries have started up. Every man in the stone business has got a nice supply of orders to begin the season with, and an assured feeling prevails that a splendid year's business is in the immediate perspective.

Fred Mathews has just returned from a trip to Florida with a party of friends.

Mr. W. W. Wicks, president of the "Big Four Quarries Co.s" is down in Florida for a short visit to the land of "the good old summer time."

ELLETTSVILLE.

ELLETTSVILLE, IND., March 2.—A. J. Thompson, cut stone contractor, has just been awarded a nice

large job at Peru, Ind., to furnish the cut stone for a church.

All the mills and quarries here are just starting up. The State Legislature has appropriated \$100,000.00 for a new library to be erected at Bloomington, which will be constructed of oolitic stone.

Needs a Crusher.

SCRANTON, PA., February 11.—Mr. M. J. Rock, contractor and quarryman, says that he is heartily in favor of the Quarryman's Association, but that he was unable to attend the meeting. He has more than a thousand loads of small stone, but having no crusher is not in a position to sell crushed stone.

B'g Demand for Crushed Stone.

DES MOINES, IOWA, February 12.—The Des Moines Building and Crushed Stone Co. say, "We have just closed a contract for a large amount of ballast with the Great Western Railway Co., for the coming year. The commercial trade looks exceptionally good for crushed rock. One peculiarity of our trade is the fact that the demand is chiefly for crushed stone for concrete foundations, there being very little demand for rubble foundation stone. During the past year we furnished crushed stone for fifty thousand yards of macadam at Ft. Des Moines and we are advised that there are yet considerable more to be laid."

Will Do Some Fine Grinding.

FINDLEY, OHIO, February 10.—The Tarbox & McCall Crushed Stone Co. will install a new Jeffreys pulverizer about the first of March for the manufacture of sand and coarser grades of crushed stone, which is looked forward to with interest as a sand for plastering, concrete blocks and other purposes.

Blesanz Stone Co., Winona, Minn.

Our stone crushing plant and cut stone yards are located on C. M. & St. P., C. G. W. & N. W. R. R. at Minnesota City, a town six miles west of Winona, Minn. Our quarry is situated 1,000 feet away from the crusher at an elevation of 300 feet. The quarry and crusher are connected by a tramway.

The tramway cars are run by gravity, the loaded car coming down to crusher pulls the empty car up to quarry. We have a No. 5 McCully crusher, 50 foot elevator and bins capacity 400 cubic yards. Railroad cars runs under the bins and are loaded by gravity, which makes cost of loading practically nothing.

In the quarry we load the stone for crusher in one-horse dump carts and dump same into an iron box fastened on to the tram car. Two cart loads makes one tram car load of about 2½ cubic yards.

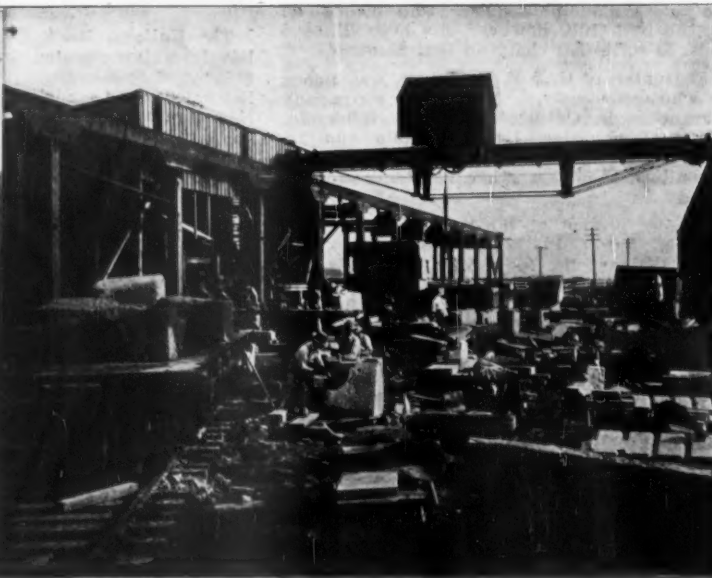
At the crusher we raise the rear of the box high enough with a friction hoist so the stone slides out of the box into the crusher. Our average run last season was 200 yards in ten hours.



VIEW IN THE FRANKLIN SANDSTONE QUARRY, FRANKLIN, CALIFORNIA.



LOADING ROUGH SANDSTONE, FRANKLIN QUARRY, FRANKLIN, CAL.



VIEW OF THE CUTTING SHED AT POINT RICHMOND, CAL.

California Sandstone Operations.—See Page 3.

QUARRYMEN GET TOGETHER

National Quarry Owners' Association Meet at the Auditorium in Chicago, and Talk Shop.

The National Quarry Owners' Association met in the parlors of the Auditorium Hotel, Chicago, Ill., on Thursday, February 23.

President D. McL. McKay was in the chair and made a few remarks regarding the possibilities of the National Quarry Owners' Association, stating that the educational features connected with same ought to make it to the interest of every quarry owner in the country to become a member, no matter whether he is interested in the crushed stone or building stone lines. He said: "All are quarrymen just the same, and all are interested in new methods and equipment for reducing the cost of getting out stone as well as getting a top-notch price for our product. We can gain a great deal of knowledge by taking an active interest in the association and I trust the meetings here to-day and to-morrow will advance materially the interest in the organization."

The secretary then made his recommendations as follows, being somewhat in variance with the thought of the meeting, but with the purpose in view of creating interest in this organization:

SECRETARY'S RECOMMENDATION.

Mr. President and Gentlemen—We regret to say that the National Quarry Owners' Association has not made the progress of the other organizations in the building trades in its first two years of life, due probably to the secretary's inability to give it the time and partially to the fact that perhaps we made the mistake of trying to include all classes of quarrymen rather than specializing our efforts in getting together the building stone quarrymen into an association and the crushed stone men separately. The reason for trying to combine the two interests are these:

First—the crushed stone proposition is largely a local business, and believing that quarrying methods while those of the crushed stone men and those of the granite men might not always be identical, yet they all use drills, they have to employ men to get out their stone, many of them are using compressed air plants nowadays and the fact that the only evil in the trade that has retarded the progress of the quarrymen is the labor problem, yet we feel that all should be interested in getting together to work this matter up and if possible get closer to their men and thereby not only get better results from their work, but would not have to contend with this everlasting spring nuisance, a strike.

But your secretary knew less about the quarry business two years ago than he does to-day, and after personal talks with quarrymen all over the country, each agreeing that there was a necessity for better methods and that there was an excuse for two good quarrymen's associations where an exchange of ideas could be had once or twice a year not only among the quarrymen, but their delegates as well from local associations, and therefore we have kept on occasionally calling the attention of the trade to the necessity for organization, and while I regret to-day that there are not more men in the quarry business present, I believe there are enough here to launch two organizations which will insure close co-operation.

I believe the quarrymen generally are nearer to the idea of desiring to work together than they were two years ago, for in other branches of the building supply line organizations have been formed and success has attended most of them, but my experience with the association is that you have to keep on trying until you accomplish what you are after. Some lines go more slowly than others, but when you get them started right and get membership interested enough to give some of their personal time to make them so, you accumulate enthusiasm as you make progress and it is

not long until you make it a grand success, provided there is an excuse for an organization.

As an illustration of a few of the things that could be accomplished, I would suggest the names of the subjects for committees appointed by your officers and the idea in view is to have the committees make recommendations on subjects named and if possible get a discussion that will bring out some good points in the business for every man present.



CAPT. D. M'L. M'KAY, CHICAGO, ILL.

You don't know of an industry of anything like the prominence of the quarry business that hasn't a good working organizations. There are a number of local organizations in existence, it is a fact, where quarrymen are able to take care of labor matters, prices and other things in a free-for-all sort of way, but they are overlooking the social feature in most every case. It is true that they have partially succeeded, but the greater successes only come through organization.

It was the hope of the secretary when this organization was first launched that it would be a matter of only a short time until we would have enough interest in the matter to employ a man who would give all his time to working out plans for the benefit of the stone quarry business. I am sorry to say that while many quarrymen have indicated by their letters that they were interested they would like to see some progress made and realize that they need help and a closer walk with their competitors, yet they have let some trifling or important matter interfere with their attendance at the meetings, or co-operating to work out their own salvation through the organization.

Is it not worth while to make the effort to make this association a live one, or organize two branches, each going its way and working out its own problems, performing the acts of the physician for the sick child? There is no man present who, no matter where he is located in quarrying stone, that

can't tell you off-hand a number of evils in the trade that would bear a surgical operation. But what's everybody's business is nobody's business. Therefore your secretary has felt that if he could get enough people to make suggestions and take an interest in the work, he is willing to give such of his time and co-operation as is possible to help you work out these problems.

We know that a trade without an association is bound to contribute to the consumer most of its profit, because the operator is not working in harmony with his competitor and therefore the buyer is able to work both ends against the middle, but while I know it would not be possible in a national organization to help you in the matter of prices, yet it would be possible to aid your local association to become stronger and to bring about new ones, as well as work out the problems in mechanical lines that are costing many thousands of dollars every year to the quarrymen because each man is experimenting on his own hook. We are satisfied in our minds that there is a need for better methods, so why not try to work the matter out here to-day and see if we can't bring order out of chaos?

The National Lime Association was organized about the same time this one was launched. To-day it has fully 50 per cent of the lime men in its ranks, and has just raised the money to employ a man to give all his time to help the lime men make money either in reducing the cost of quarrying, lime burning, or increasing the selling price of their product. The minutes of meetings of this association, which are furnished to members only, are worth the price of ten years' dues, or \$250.00 to the library of any lime man.

Our association built on the proper lines could have the same benefits, but your officers can't do it all alone. Every man here and two or three hundred of the best quarrymen in the United States must be interested. How can we do it?

We have applied the same methods to this association that we have to others, but they do not seem to bring about the same results, or to stir up the proper interest. What else can we do to keep the ship afloat until we can get enthusiasm in carloads and have a meeting with a thousand men in attendance? Your secretary is willing to give all the time he possibly can to help this organization, but the men at this meeting must make suggestions to aid in working out the plans, and you can soon feel sure that this organization is to be one of the best kind.

Make your plans to stay here until we work out the problem, and while you may never get any memorial or thanks from your competitor or anybody else in the trade, you will do yourself good while you are working it out, and what helps you helps somebody else, and if you can work out the idea of more intelligent methods and better prices, the stone quarrymen of the United States will have done a whole lot of people good. All that is necessary is to get the spark lighted to bring about two good associations, for, as I have stated, the stone quarrymen generally, are interested. I hope every man present will speak out his mind, and we will be able to accomplish what we came here for.

THE ATTENDANCE.

Among those who were in attendance were the following:

B. F. Froney, Portage Entry Redstone Co., Jacobsville, Mich.
John P. Ries, W. McMillan & Son, Chicago, Ill.
P. N. Denison, Du Pont Powder Co., Cincinnati, O.
J. B. Brodie, Hugh Murphy, St. Vrain Red Sandstone Quarries, Lyons, Colo.
J. C. Beeler, Cedar Rapids, Iowa.
John S. Roper, Grafton Quarry Co., Grafton, Ill.
Chas. Biesanz, Biesanz Stone Co., Winona, Minn.
Chas. A. Pfeiffer Stone Co., St. Joseph, Mo.
S. H. Atwood, S. H. Atwood & Co., Lincoln, Neb.
S. M. Hall, Brokenword Stone Co., Bucyrus, Ohio.
Edson T. Pollard, Patch Manufacturing Co., Rutland, Vt.
James Saul, Byrne & Saul, Dubuque, Iowa.
Hugh Storey, Broderick & Bascomb Rope Co., Chicago, Ill.
Leon F. Rains, Allis-Chalmers Co., Milwaukee, Wisconsin.
E. A. Fengler, Eagle Point Lime Works, Dubuque, Iowa.
S. M. Wolf, Bellevue, Ohio.
Capt. D. McL. McKay, Consolidated Stone Co., Chicago, Ill.
Wm. Hammerschmidt, Elmhurst-Chicago Stone Co., Chicago, Ill.
E. H. Defebaugh, Rock Products, Louisville, Ky.

The treasurer's report showed the assets of the association much in excess of its liabilities, and with an increased membership, bound to make great progress in the future.

The first subject under consideration was the question whether it would be desirable to re-organize the association in two bodies.

Mr. Charles Pfeiffer, of St. Joseph, Mo., said: "It hardly behooves me, a new member, to offer suggestions. I agree that the work of any association falls largely on the secretary, and the secretary ought to be paid to give it time enough to secure a large membership, and outline the advantages of such an organization to the quarrymen generally, to make it plain enough for them to see the benefits to be gained by joining this organization. I have found in the past that to meet my competitors and talk over our experiences has been beneficial. No man can come to one of these meetings without gaining information of value, and while it is not possible for this organization to handle the price question, it can do a great deal toward improving conditions among the quarrymen. As an illustration of what this will do, I cite you our meeting of the Cut Stone Contractors in New York recently where men who came together had the opportunity of seeing circular diamond saws of two makes running, and we of the West who had never seen them in operation learned something. I agree with the president that there is much benefit to be gained. We being all quarrymen, it seems to me we could operate under one head and, if necessary, have two separate meetings on different dates, but the benefit to be derived is great and I hope every quarryman in the country will lend his aid to this organization."

The president then introduced Mr. Sol. M. Wolf, who in turn called on some other quarrymen to speak on the subject named.

Mr. Wolf said: "I am in accord with the movement, and while I am a crushed stone man, I am heartily in favor of anything to improve conditions. If the crushed stone men think that this organization should be divided, I have no outside view on the subject, but I do feel that we can all gain benefit from a national organization, and the co-operation of the whole trade will insure its success. I regret to see that some of the men who were at the first meetings, are not on hand. We need all to take a pull and it seems to me that local organization will be the way to bring it about. The crushed stone men, for instance, have local conditions. We can't ship a great distance, and therefore by having a local organization we could handle this and other local matters and come to this national meeting to gain information which is extended to us on quarrying methods, and how to do it better. One thing about the crushed stone man, most of them get out curbing or some other class of building stone, with the exception of the ballast men, so that it occurs to me that we are all interested in this association, but in any event, let us find out the best way and then go ahead, each doing his part. I was impressed with the talk of our friend, Mr. Beeler, who talked on getting good prices for stone."

Mr. Beeler said: "While I have not been a member of this association, I do not agree with the idea of a division of same, for the reason that most quarrymen get out all kinds of stone, building stone, crushed stone, footings, etc., but it does not worry me because our president sold the building stone for the library of my town. I am not a price cutter, and never make prices in competition; I make prices for Beeler and not for others. I believe it would be possible to sell just as much stone at 5 cents as at 2 cents. I tried for several years to get the co-operation of my neighbors before I finally got it. I have always had a fair share of the trade, and to show that I feel kindly toward my competitors, I have often loaned derricks to contractors to handle another fellow's stone. We all have our faults, but we should have pleasant relations between ourselves and our neighbors and discuss subjects in which we are all vitally interested. My specialty has been bridge masonry, and while concrete has cut a slice out of my business, I do not run down what they are doing, but if they take my trade I will do what they are doing and furnish my trade what they want."

He then spoke of an instance where concrete beat them out of a contract for a pier, and told other experiences. He also said: "I hate to see this organization divided. It seems to me our interests are practically identical. It costs me a great deal of money to equip my quarries, and exchange of information on the subject of methods and matters of this character should benefit every one. I believe, for instance, in short derricks; you

get less waste and make more money by operating in that way. Recurring to the subject of concrete would say that there are two railroads in this town who have been using concrete work, but one of them says that the good old stone that God made is good enough for them."

Mr. Roper, under the subject of "Reorganization," said: "I do not see how we can separate the association. This association should embrace all classes of quarrymen; we furnish crushed stone and also furnish cut stone for foundations, and to emphasize the possibilities of this organization, we should send out missionaries to effect local organizations, and I am sure it would strengthen the arms of this organization and we will gain much by coming together. Jealousy often causes unsatisfactory conditions in local territories. If we had some one from the outside to come in, it would bring about better organization. It would aid us in getting an equalization of freight rates and get a fair show in connection with terra cotta and other materials with which we have to compete."

Mr. Brodie, of Denver, said: "I agree with Mr. Roper's remarks. When we have to do cement, we do it, but I do not see how we can divide the National Quarry Owners' Association. I find that the crushed stone line is useful to us to get rid of our waste, but we are principally selling to cut stone men. It seems to me we ought to stick together and work out the problems before us because there are many of them."

Mr. Atwood, of Lincoln, Neb., said: "I am not in my place as I am handling cheap stone exclusively. I think there should be local organizations in every territory. We would no doubt find it hard to bring this about on account of jealousy, but I am in favor of these organizations. Of course our conditions are very much different from any of those I have heard spoken of here. I have five feet to strip and ten feet of stone. Of course stone is scarce in our section and the consumer pays the bill and our stripping account is a fancy one."

Mr. Gengler said: "I have not had much experience, but I am favorable to local organizations and hope to have this association embrace all lines of quarrying."

Mr. Hall, of Bucyrus, Ohio, said: "I am not from Missouri. I have had experience and think we should have local association auxiliary to the national, and with the co-operation of the general officers we can good. I am heartily in favor of any action this association takes. I would suggest among the matters to be considered, weights and measures of crushed stone. There ought to be a method for selling."

On motion of Mr. Hall the meeting agreed to make an effort to see that local organizations were completed in all sections embracing the territory of the National Quarry Owners' Association, and that each member continue working out these lines through their officers during the coming twelve months.

On motion of Mr. Wolf the Executive Committee was instructed to present any changes desirable in the constitution and by-laws to make it possible to form local organizations so that no quarryman would be prevented from joining this association.

This was seconded and passed unanimously.

Mr. Wolf remarked that he appealed to all that were here to join these organizations to work out matters that would benefit all concerned. He said: "It seems that our quarry friends all over the country are waiting to see what the National Quarry Owners' Association will do before they join. If that is the prevailing spirit we will never have a strong quarry association. We need interest and enthusiasm, and with your co-operation we will secure it."

The following committees were then appointed:

Uniformity of Weights and Measures—Mr. S. M. Hall, Mr. Jno. S. Roper and Mr. E. C. Beeler.

Suggestions for Cost Per Yard of Getting Out Stone—Mr. Chas. P. Biesanz, Mr. S. H. Atwood and Mr. T. E. Wyant.

Co-operation with Cut Stone Contractors—Mr. Chas. A. Pfeiffer, Mr. Sol M. Wolf and Mr. B. F. Froney.

The meeting then adjourned until 9:30 a. m. Friday.

FRIDAY'S SESSION.

The meeting was called to order by President McKay.

The first thing in order being a discussion on "Co-operation with the Cut Stone Contractors," the report was read as follows, adopted and amended after a general discussion:

CO-OPERATION OF QUARRY ASSOCIATION WITH CUT STONE CONTRACTORS.

Mr. President and Gentlemen—Your committee offer the following, as a result of their deliberation, upon the subject: Aims of the Quarry Owners' Association. One of its purposes shall be to so conduct their business as to gain the good will and esteem of the cut stone contractors, and by the term cut stone contractor we mean a person, firm or corporation engaged in the cut stone business and stone masonry.

It shall be the purpose of the Quarry Owners' Association to disapprove and discountenance the practice of selling our product, either in the rough, sawed, planed or turned to others than cut stone contractors and stone masons. Believing that they should receive the encouragement of this organization, this association appreciating the very apparent fact that the cut stone contractor is our natural ally, whose interest is identical with ours, whose natural tendencies are in line with our business, that of producing stone, while that of the general contractor is not confined to our line of business, but is naturally enough ever ready to approve of or suggest the substitution of any other material for ours.

At all times we are confronted with substitutes for stone, suggested by architects, such as terra cotta, copper, galvanized iron and cement blocks, and it behooves us to stand by our natural friends, those who, like ourselves, are engaged in the stone business, our interests are identical, that of the production and use of building stone.

It is the opinion of your committee that these views upon this subject should be promulgated among our members and those whom we solicit for membership, our stand upon this point should be made clear to cut stone contractors, to the end that we may get their moral support and co-operation, that we may ultimately have them appreciate our efforts in their behalf and in return have their support and help in the use of and introduction of stone furnished and supplied by members of our organization.

Allow us to say, that in expressing our views on this subject, and in making our declaration, we believe it to be due to the man who is engaged in the cut stone business, whose sole interest lies in that direction, whose money and means are invested in the cut stone business, whose entire energy, capabilities, knowledge and inclination is centered in the advancement of the cut stone business, whose influence is constantly at work with architect and owner, suggesting the use of stone for building purposes, and submitting estimates for its use, urging its adoption in competition with other materials. Gentlemen, it is but just and due him that you take favorable action on your committee's declaration.

PFEIFFER, WOLF AND FRONEY, Committee.

It was decided that the cut stone contractor must not apply to those only who do cut stone work exclusively, but stone masons and contractors who are generally in the business, handling and manipulating stone, the idea in view being to get these operators into more regular channels than they have been in the past.

This motion was passed unanimously.

The Committee on Weights and Measures reported as follows:

REPORT OF COMMITTEE ON WEIGHTS AND MEASURES

We, the Committee on Weights and Measures, respectfully recommend that crushed stone, rubble and rip-rap be marketed by net ton (2,000 pounds), and that this association adopt the above weight as a fixed unit.

S. M. HALL, JOHN S. ROPER AND J. C. BEELER,

Committee.

It was found in the discussion of this report that the government work was done by the yard in some sections and in others by the ton, but that depends largely on the territory. As a matter of education the new weight will be used exclusively and will be beneficial to all concerned because it will be a basis to make prices on and will be easier for all to know what they are in competition with.

Mr. Atwood in speaking on the subject said: "I have been up against it for fifteen years. We sell exclusively by the hundred pounds or the ton."

Mr. Beeler remarked that the quarryman who did not sell by weight was losing practically all his waste with no chance to get on the proper basis, for some people will base their weights on 3,600 pounds and others on 2,000 pounds, and if weights and measures were generally adopted by the quarrymen, it would be a good thing. We not only weigh by the carload, but measure it up."

Mr. Evans said he sold his stone by railroad weights and found it satisfactory.

Mr. Hammerschmidt said: "For twenty-two years we have been weighing our stone, and the difference between our customers' weights and ours is so little that it amounts to almost nothing. As a general thing the railroad weights are correct and the stone is weighed in your own yard. We experimented and found in a year's shipments, 150 carloads, the trial balances on the weights only showed a difference of \$1.65. The way we figure it, when the railroad checks a carload of stone it is theirs and we do not allow weights on the other end, and as a result, there is satisfaction all around.

Mr. Roper suggested that the association recommend that rubble be sold by the ton or perch, which is 22 cubic feet and weighs 2,600 pounds.

This was passed.

After some further discussion, the meeting adjourned until 1:30 p. m.

AFTERNOON SESSION.

REPORT OF COMMITTEE ON COSTS.

Your Committee on Suggestions as to Cost of Producing Crushed Stone beg leave to report as follows:

Upon investigation we find that the subject must be treated locally, as the conditions vary to such an extent that it is practically impossible to make suggestions as to cost of production that will cover all local conditions. All that your committee can hope to do is to bring out an expression of the experience of the members present.

We find it necessary to divide under the following heads, upon which we hope to get an expression from each member present.

Our quarry is situated 1,000 feet away from the crushers at an elevation of 300 feet above the crusher. The quarry and crusher are connected by a three-rail tramway which runs by gravity.

The loaded car coming down to crusher pulls the empty car up to the quarry. In the quarry we load the stone in one-horse dump carts and dump same into an iron box fastened on to the tram car. Two cart loads makes one tram car of about 2½ yards.

At the crusher we raise the rear of the box high enough so the stone slides out of the box into the crusher.

1. Cost of stripping—Mr. Wyant.
2. Cost of drilling and whether steam or air is used.
3. Blasting and explosives—Mr. Biesanz. large or small holes and depth.
4. Means of conveying stone from quarry to crusher—Already.
5. Maintenance or repairs.
6. Depreciation. What per cent.—Mr. Beeler.
7. Cost of labor—Mr. Wyant.
8. Cost of crushing—Mr. Wyant.

CHARLES P. BIESANZ AND T. E. WYANT,
Committee.

Mr. Wyant was asked to start the discussion. He said: "The reason I have not taken the lead in these discussions was the fact that we are admirably located, with just three feet of dirt, and are just outside the town corporation, the city takes our dirt at practically no cost to us outside of the cost of stripping and loading the dirt on wagons. We have not spent over \$200.00 per year for stripping and everything is also favorable as far as labor is concerned. We pay 15 cents per hour for shoveling. Therefore our labor is cheaper. Our crushing cost is also favorable owing to the fact that we handle our stone to the crusher at 15 cents per carload, owing to our location. As to shooting the blasts, we put them in about 25 at a time, 5 feet from the face and 10 feet apart. We use something like 25 pounds of dynamite in a hole 28 feet."

Mr. Beeler was asked to talk on "Depreciation." He said: "We have, I expect, more new hoisting lines around our hoisting apparatus than most operators have, because we get new rope before our old rope gets bad, but we consider it money saved, by not having people hurt, and buying new rope. We also have our own machine shop and are careful about our equipment, to see that it is up-to-date all the time. One thing, we find that in getting the stone to the crusher, that dry stone works easier than wet, and therefore we do not get out too much at a time."

Mr. Wolf, in speaking on "Depreciation," said: "It seems to me it is all in the way you get up

your books. For instance, where we increase our force and have to get new shovels, bars, or anything of that kind, we add that to our general fixture account, but if they wear out and we replace them, it comes under the regular expense account. Of course figures will vary because of the way you manipulate your books. You do that as you see fit, but depreciation should be considered always in the price."

President McKay said: "We are like Mr. Beeler; we are buying new machinery all the time. We would rather do that than run the risk of damage suits. All the cost of depreciation we charge up to new equipment and 'betterments' each year, and charge each quarry with its general expenses as well as its new machinery, etc., while each quarry pays its share of the operating expenses. I know some few who were not putting their master mechanic's expenses in with the operating expenses, but think that is like a man who gave his note for three months for something he owed, and when he had done this he said, 'Thank God that is paid.'" He spoke of the new appliances for stone, saws and their many saving abilities.

Mr. Biesanz, on the subject of "Blasting Explosives," said: "We drill holes 10 feet deep, 4 inch holes. We use dynamite and special explosives."

The next matter under consideration was the cost of drilling. In this connection Mr. Wolf said: "We drill in the upper floor 22 feet and in the lower floor 20 feet." He told of the piping of steam for 500 feet and then found it necessary to add a traction engine for drilling. He said: "The fuel, etc., costs something like \$8.00 per day, and we think there will be a saving by using air instead of steam."

Mr. Hall said: "We put in a compressor last year and use 1½ inch pipe for condensation. In the old days, our drillers would drill 40 or 50 feet per day; after putting in the compressor, and piping 500 feet away from the compressor, they can drill from 115 to 122 feet in a ten-hour day. I think 4 inch pipe is better, and graduate it as it gets closer to the drill, to 2 inch pipe. Of course we are pleased with our drill. We use natural gas, and have added another drill. It is a great saving and much more satisfactory than the old way. Our saving in our fuel account was something like \$386.00 last year, as well as the saving on the wear and tear on the machinery. We are also able to drill in cold weather. We keep our pipes in shape by using a little waste and oil and putting a fire under it. Several new compressors are going into use in our section. I believe we could save a drill in two years by using air, also because the wear on it from steam is much greater than air."

Mr. Denison, the powder man said: "While there is a great deal of difference in the locations, from what I have seen, I believe the best results come from big holes and 1½ inch sticks of explosives. One man I know of uses 14 foot holes and 6 pounds of powder and another uses 14 pounds for a 14 foot hole. This is a saving of something like 40 per cent. dynamite."

Mr. Hammerschmidt said: "We find it desirable in drilling rough rock to have our holes 6 feet apart. We don't go so deep as some of our fellows, and prefer to use two benches on 30 feet as it is possible for you to get the stone blasted away from its face better."

President McKay said: "It is only a question of time until hydraulic stripping and compressed air will be the best factors in the business, for to-day it costs something like 23 or 25 cents per yard to strip while for instance, in hydraulic stripping it costs 16 to 17 cents. We have installed a hydraulic stripper and I believe the results are going to be more than satisfactory."

Mr. Hammerschmidt remarked that he used air in drilling and found that after three years his Ingersoll-Sergeant was as good as new while under the old system of using steam they wear out in a very short time.

Mr. Beeler told his experiences in hydraulic washing and stripping, and by his own appliances he was able to do it as cheap as 3 cents per yard. He uses strong pressure and by using 2 inch hose instead of 5 inch pipe he is able to get better results, and therefore he had adopted this means and suggested that others do likewise.

President McKay remarked that the supply men and manufacturers of machinery had spoken at different times of wanting to become members of the association, and if they desired to join, he thought it would be to the best interests of the association, and therefore on motion of Mr. Wolf, the following resolution was passed amending the by-laws, admitting honorary members as follows:

HONORARY MEMBERS.

Manufacturers of machinery and supplies may become honorary members of this association without the power to vote or hold office by signing the constitution and paying the annual fees.

The secretary then made a few remarks on local organization, assuring any of the members, or those in the trade who had not yet joined the association, that if they desired a local organization, by taking up the matter with him he would make it a point to, if possible, spend a little time with him and bring it about.

Mr. Wolf, speaking of local organization, said: "There is certainly great need for local organization. The meanest competitor you have is the man you do not know, and by bringing about good organizations, in different territories, we certainly can add to the interest of the organization and help everyone concerned."

The next thing in order being the election of officers, Capt. D. McL. McKay was elected president, unanimously, and without discussion or the nomination of any other man. Mr. E. H. DeFebaugh was unanimously elected secretary-treasurer. The president cast the vote for Mr. S. M. Hall, Bucyrus, Ohio, for first vice president; Mr. Hall was elected. Mr. Chas. Pfeiffer, of St. Joseph, Mo., was elected second vice president, and after several nominations, Mr. B. F. Froney, Jacobsville, Mich., was elected third vice president.

The directors were elected by acclamation as follows: Robert Reed, Bedford, Ind.; J. C. Brodie, Denver, Colo.; H. F. Goetzmaier, St. Louis, Mo.; Jno. S. Roper, Grafton, Ill.; Chas. P. Biesanz, Winona, Minn.; S. M. Wolf, Bellevue, Ohio; S. H. Atwood, Lincoln, Neb.; J. C. Beeler, Cedar Rapids, Iowa.

After the election, Capt. McKay, in speaking of his re-election said he had hoped some other man would be elected for the place, but since it had pleased the members to elect him for the honor, he appreciated same and would do the best he could. He spoke of the interest Ohio had taken in the association and suggested Ohio for the next meeting place. After discussing the matter Mr. Roper moved that the selection of time and place for the next meeting be left to the Board of Directors to be decided. This was seconded and passed unanimously.

Mr. Wolf, in speaking about the kind words expressed in reference to the Ohio members remarked that it was the hope of the Ohio people that the association become strong. He said: "No matter where we meet, the Ohio people will turn out, and we hope that in the future when we get a good, strong association, you will not overlook us, and we hope to have the pleasure of having one of our meetings in one of our Ohio cities."

The following resolutions were then passed: Resolved, That a vote of thanks be given the publisher of Rock Products for his hearty good will, sympathy and co-operation for the interest taken through the columns of his journal in behalf of the Quarry Owners' Association. The columns of this most valuable journal have served to extend the stone industry, to improve it, and to enlighten quarry owners on every vital subject.

Thanks are due each and every officer and committeeman of our association who so cheerfully contributed his time and energy in the discharge of his duties during the past year; therefore be it

Resolved, That a vote of thanks be extended to the officers and committeemen of this organization for their indefatigable exertions to the end of up-building the interests of quarry owners, and for many courtesies extended its members.

It was then announced that the Allis-Chalmers Co. invited the delegates to visit their plant.

Mr. P. N. Denison, of the DuPont Powder Co., Cincinnati, Ohio, said he would be glad to help the association in any way he could and was sure his company would be glad to become a member.

Mr. Hammerschmidt remarked that the machinery men could do a lot for us, and that we hoped to have their co-operation.

A little joke was sprung on the machinery men by Mr. Wolf who expressed his regret that the quarrymen were not in a position to accept a banquet when the delegation was so small, but at some time in the future he hoped to be able to accept the banquet every time.

At the adjournment everybody felt that he had been well repaid for the excellent meeting, and the meeting adjourned, subject to the call of the Executive Committee.

The Ellsworth Stone Co.

IOWA FALLS, IOWA, February 28.—The Ellsworth Stone Co. is quite an important factor in the business life of this town, employing a goodly number of men, and operating its quarry according to the best methods. There are many special advantages which have contributed to the success of the enterprise. These exist not only in the advantageous location of the quarry, but in the personnel of the officers, who understand their business and are prepared to push it for all these in it.

Hale Roberts is president; E. S. Ellsworth, treasurer, and D. T. Jones, secretary.

The quarry has a face fifty feet above the level of the river, and is much deeper as one would care to go. The ledge has been opened 800 feet long, and can be extended 400 feet more if necessary. There is practically no stripping. The stone lies in layers and blasts out freely. In fact, not more than 10 per cent. requires sledging. The owners of the quarry say the cost of production is the lowest of any quarry in the United States, barring none.

The plant was designed by Hale Roberts, who was well qualified for his task because of his extensive experience in the stone business as a crusher salesman, and in other capacities. The accompanying illustrations give some idea of the plant. It contains a gyrating crusher, 55-foot elevator, revolving screen 40 x 14, friction hoist and all the equipment necessary for a complete and up-to-date plant, with a capacity of 400 tons a day. The storage bins can take care of about 800 tons.

The plant is operated by a McCormick water wheel working under a 10½-foot head. Approximately 75 h. p. is developed, which is more than is needed.

The company will soon open a stone yard in Des Moines, a railroad having furnished vacant property for that purpose. It will build an elevated track and use center dump ballast cars. The different sizes of crushed stone will be carried in stock, and delivered to the trade as desired.

The quarry at Iowa Falls has switching facilities to the Illinois Central, Rock Island and Chicago Northwestern railroads. After a visit to Ellsworth quarry a competitor is said to have remarked that the company required no power, no engineer or fireman, no stripping, no pumping, no sledging—in short, that all was profit.

E. S. Ellsworth, treasurer of the company, is the well known philanthropist and capitalist of this city. He is president of the Iowa Falls Northern and also the head of several banks in Iowa and other States. His donations to worthy charities and public enterprises have been numerous. Among the monuments to his liberality are: The Ellsworth Hospital; the Ellsworth College; the Ellsworth Golf Grounds; Goodyear Park, and the



HALE ROBERTS, PRESIDENT OF THE ELLSWORTH STONE CO., IOWA FALLS, IOWA.



BIG CRUSHER PLANT AT IOWA FALLS, IOWA, ELLSWORTH STONE CO.

Carnegie-Ellsworth Public Library. Iowa Falls is to be congratulated on numbering a man of Mr. Ellsworth's kind among her citizens. Mr. Ellsworth is not the man to fail at anything he undertakes, and his connection with the stone company insures its success.

Mr. Roberts, the president, is a man of experience and ability. He is now at his home at Racine, Wis., but will come to Iowa Falls April 1 and take charge of the sales department.

David T. Jones, the secretary, has had many years of experience crushing stone in Ohio and the conditions around the Ellsworth plant clearly demonstrate that he is the right man in the right place.

Associated with these gentlemen in the organization of the company are R. O. Evans and R. W. Jones, both hustling business men who are sure to prove factors in the success of the concern.

Crushed Stone in the South.

CHATTANOOGA, TENN., February 1, 1905.—The crushed stone industry of the South has been growing with greater rapidity during the last five years than those who are laboring in the North have any idea of. These crushed stone plants have been stimulated by the growth of the iron industry and many of them are devoted entirely to the production of flux rock. The Chickamauga Quarry and Construction Co., however, while its quarries produce an excellent quality of flux stone, have been giving most of their attention to the production of crushed stone for ballast and concrete work as well as for the production of building and bridge stone. Another specialty of this company is engine beds, since the uniformity of the layers are such as to make this stone well suited for the economic building of such beds as well as bridge piers.

This company has something of a curiosity in the way of a crusher. They have one of the very old Gates' crushers, No. 3 in size, which bears the number 1,037, which indicates that it is one of the early crushers made by this big company. This crusher was rated for 200 yards per day, but Manager Walter Holmes states that they have no difficulty in putting through twenty-five yards in excess of this at any time they wish, at the present time, after this long service. The company is also operating a No. 4 Gates crusher at another quarry which is close by and owned by the same company. This company began operations about 1890 at the present location, which is on the east side of Mission Ridge on the W. & A. road, and was known originally as the Richey quarry, which was worked for flux and ballast.

The Hawley quarry is operated mainly for building stone. The firm has been known as H. F. Holmes, Holmes Bros., and Holmes & Son, each operating different properties. These were united to form the present concern in 1903. The officers of the company are H. F. Holmes, president; W. W. French, secretary, and W. S. Holmes, treasurer. This makes a strong combination, as all of the Holmes boys have been for many years in the stone and contracting business, and one of them is a civil engineer as well. The secretary who has been with them for the last four years, was formerly a practicing physician and is at the present also secretary of the Builders' Exchange, Chattanooga, which has been a very successful organization and has operated in harmony for the benefit of all concerned ever since Mr. French has been connected with it.

A new stone company is being financed which expects to open a quarry in Columbia township, Ohio, in the spring. W. B. Thompson, of Lorain, Ohio, is the moving spirit.

The new company to be known as the Pennsylvania Lime, Stone and Construction Co., with offices at Harrisburg and Mapleton, Pa., have acquired the well known Mapleton quarries which have been successfully operated by Swope & Gayton for the past twenty years.

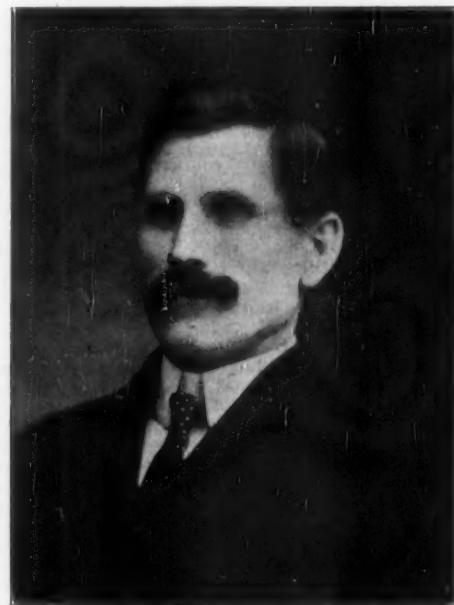
The Columbia Stone Quarries, office at Washington, D. C., have just been incorporated. The capital stock is \$100,000.00. Joseph H. Bradley is president, treasurer and director, Washington, D. C.; R. C. Hayden, secretary and director, Caldwell, N. Y. The company will quarry and prepare for sale stone, sand and gravel.

The Glantown Stone and Glass Sand Co., of Toledo, Ohio, is a new incorporation of \$150,000.00, by John P. Service, W. C. Gayhart, W. W. Edison, A. S. Close, C. C. Miner and M. P. Glann. As soon as the weather will permit a big crushing plant will be erected which will have a daily capacity of 1,600 tons of crushed stone and 400 tons of glass sand per day.

The Bedford Bowling Green Stone Co., whose quarry is located near Bowling Green, Ky., has been reorganized and the name of the corporation changed to the Bowling Green White Stone Co. The new company will operate under a Delaware charter and the officers are Levi Bloom, president; Spratt Bridges, secretary and Charles Goldsmith, vice president, all of Louisville, Ky.

Mr. John Kline, of Halifax, N. S., in speaking of the movement to perfect quarry associations in the United States said, "While I am in sympathy with the effort of Rock Products to improve the business, and especially that of the quarries, I can not say it would be of much benefit to me, being so far away from the seat of war. The condition of the quarries in Nova Scotia is not satisfactory at this time, although I am in sympathy with any movement that will help the trade. The granite business of this section has been very much on the down, owing to the advanced wages for cutting granite. Nova Scotia has excellent granites, but so long as the workmen have practically full control of the business, quarrymen will not be encouraged to take forward movements."

The famous St. Genevieve (Mo.) sandstone quarries, which have been idle for thirty years on account of lack of transportation caused by a freak of the Mississippi River about that long ago, are to have operations resumed in the near future, as the new Memphis branch of the Frisco Railroad affords the solution of the only difficulty. A company is being formed by capitalists residing at Cape Girardeau, Mo. Much of the material for the Eades bridge at St. Louis came from these quarries and many conspicuous constructions in widely separated parts of the country were built of the same quarry. Enough dimension material to make several hundred carloads is now ready for shipment, being left on hand when the river took a chute and stopped transportation.



DAVID T. JONES, SECRETARY OF THE ELLSWORTH STONE CO., IOWA FALLS, IOWA.

Stone.

The National Cut Stone Contractors' Association.

Meets Semi-Annually.

Chas. H. Isele, Peoria, Ill. President
 G. N. Williams, Jr., New York, N. Y. First Vice President
 George Dugan, Bedford, Ind. Second Vice President
 Henry Struble, Chicago, Ill. Secretary
 Jos. W. Milville, Pittsburg, Pa. Treasurer

Official Organ, ROCK PRODUCTS.

The H. M. Dalton Stone Co., Boonville, Ind., has increased its capital stock from \$45,000.00 to \$50,000.00. Clark P. White is president.

The F. E. Conley Stone Co., of Utica, N. Y., has been incorporated with a capital stock of \$100,000.00. One half of this amount has been paid in.

The Mississippi-Indiana Stone and Timber Co., of Jackson, Miss., has been incorporated with a capital stock of \$100,000.00. Their product will be put on the market at an early date.

The Los Berros Stone Co., of Los Berros, Cal., has been organized with a capital stock of \$25,000.00. The directors are: M. Welch, F. L. Baker, M. A. Baker, F. W. Force and Don W. Carlton, all of Los Angeles.

The N. E. Bolle Cut Stone and Contracting Co., of Carthage, Mo., has been organized with a capital stock of \$5,000.00, all paid up. N. E. Bolle, George T. Riddle, H. F. Gruetzenhacher, Fred J. Remmers and Philip J. Davenport are the incorporators.

The Davenport Stone and Marble Co., of Davenport, Iowa, has been incorporated with a capital stock of \$15,000.00. The officers are: T. F. Kenney, president; Louis Schroeder, vice president and treasurer; M. J. Malloy, secretary and manager. The company will build and deal in stone, marble, etc.

John Diebold & Sons, Louisville, Ky., have about completed a large amount of improvements which really amount to a substantial increase of capacity. They have built a new shed, and installed a 10-ton electric traveler and added a planer to the outfit, the New Albany Manufacturing Co. type of traveler and planer being chosen.



HENRY FURST, SR.



HENRY KERBER.

BUILT UPON MERIT.

With the Experience and Counsel of Their Fathers, Young Energy Pushes On to Greater Success.

There is one name in the cut stone business that is synonymous of good workmanship and prompt attention to business, and that is Furst-Kerber.

In 1861 Henry Furst, Sr., and Henry Kerber started the firm of Furst & Kurber. To-day the Furst-Kerber Cut Stone Co. is known from the Atlantic to the Pacific, with general offices in Chicago and their cut stone establishment at Bedford, Indiana.

The elder Mr. Furst and Mr. Kerber had been workmen in the United States stone yards before they organized this firm, and both were Germans, Henry Furst having been born in Ullweiler and Henry Kerber in Stuttgart. They learned the stone cutting business in the old country and each had worked at the business in Chicago and New York before this firm was organized. In fact, Mr. Kerber worked on the first fine sandstone bridge in Central Park, New York.

The old firm continued until the fall of 1868, when they concluded that the business was growing and that there was a chance for two concerns in the business, so Henry Furst started a yard at No. 443 Fifth Avenue, and Mr. Kerber started another yard a short distance away.

It was quite a few years later, in fact in 1883, that Henry Furst, Jr., was admitted to a partnership, and the firm was known as Henry Furst & Co., the partners being Henry Furst, Sr., Peter Neu and Henry Furst, Jr. About the same time Henry Kerber took his son, W. L. Kerber into partnership, and that firm was Henry Kerber & Son. The younger members of these firms now compose the Furst-Kerber Cut Stone Co., and have been cronies since they were young fellows, and spent several years at the Sheffield Scientific School at Yale University, so, when in 1883 the Furst-Kerber Cut Stone Co. was organized, these two old time pals became partners with Carl Furst who had been a partner in the firm of Henry Furst & Son for a number of years. Carl Furst was a stone carver, and had worked to such advancement until he became foreman at Henry Furst & Co's establishment. He shortly afterward became a partner and has been active in looking after the manufacturing end of the business ever since.

When this company was organized the officers elected were the same as they are to-day, namely, W. L. Kerber, president; Carl Furst, vice president and general manager; Henry Furst, Jr., secretary-treasurer.

The dream of this firm of young men was to see the day when they could build a modern, up-to-date shop and carry out their ideas to the letter, be in a position to even excel anyone in the business by making it possible to work at all



INTERIOR OF THE OLD SHED.

FURST-KERBER CUT STONE CO., BEDFORD, IND.

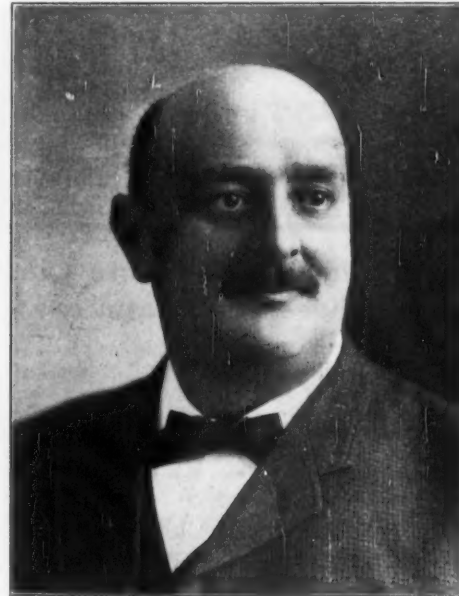
INTERIOR OF THE NEW SHED.



HENRY FURST, JR.



CARL FURST.



W. L. KERBER.

times of the year and be able to fill orders at any time on modern lines.

Owing to labor conditions in Chicago, this company located their manufacturing plant at Bedford, Ind., and for several years past have been looking about to find, if possible a more satisfactory location. They have been using their old sheds, and although they have modernized from

This new factory is not only the realization of a dream, but a necessity, owing to the increased business of the company in Indiana Limestone. That you may have some idea of its proportions, the company bought in the city of Bedford, seven acres of ground, and the present buildings occupy two acres under one cover. The size of these buildings is 425x165 feet with a Bedford stone engine and boiler room which is 73x40 feet with 18 inch walls. The main factory is divided into three compartments, the part where the trimmer works, cutting shed and sawing and planing room, all under one roof.

There are four electric cranes built by the New Albany Manufacturing Co., and the shop contains six modern gangs, one Anderson diamond saw, six planers, one of the same being circular, a large turning lathe that is capable of turning columns 28 feet long by 4 feet 6 inches in diameter. The engine room contains two engines made by the Harrisburg Foundry and Machine Co., one 17x16 feet, the other 14x15 feet. These engines are modern and self-oiling. There are four boilers 60 inches by 16 feet. This plant is heated by hot air and was started the first of February.

Mr. Carl Furst, the manager, as well as the other officers of the company are very much enthused over the way things have started up, and the new year's business makes it look like it is going to be a busy place during 1905.

This company has built many large jobs of Indiana oolitic stone. Among those of note are the Phoebe Hurst Academy, Willard Hotel, Bureau of Standards and Connecticut Apartment building in Washington, D. C.; Martin Ryerson Library, of Grand Rapids, Mich.; beautiful residence of E. J. Berwind, of Newport, R. I. (which is illustrated by a full page engraving elsewhere), as well as the Wells residence of the same city; the Exposition Music Hall at Pittsburg, which took 120 carloads of stone and was built in record breaking time.

This company does business in cut stone work exclusively and confines itself to Indiana oolitic limestone. They cut, finish and prepare stone for setting, and are also specialists in turning columns.

The members of the firm are all 'round and about the fortieth year, are good hustlers. They have been dubbed peculiar names, for instance, "Wurtzberger," but that was probably due to the fact that the namer was a sandstone man.

The main office of this company remains as of yore, 443 Fifth Avenue, where they have a two-story office building of Indiana oolitic limestone which is occupied on the first floor by the business offices and on the second floor by drafting rooms.

The members of this concern follow in the footsteps of their fathers, catering to high class work, and have never been cheap class men. They prefer to do a first class business and satisfy their customers when they turn out a job.

Having had experience in stone cutting as well as the commercial end of the business, and having had the counsel of the older heads, this firm has succeeded in business, and their success has been warranted because of their substantial, business-like methods.



WILLARD HOTEL, WASHINGTON, D. C.,
FURST-KERBER CUT STONE CO., CONTRACTORS.

time to time as far as possible, when it came to building their new shed last year they found a number of new appliances to add to their already excellent equipment. The new shed is next to the largest in the United States, and perhaps the largest shed occupied by building stone operations exclusively.



PARTIAL VIEW OF NEW SHED AND ENGINE ROOM.



MOVING 3½ TONS OF STONE IN ONE PIECE.

FURST-KERBER CUT STONE CO., AT WASHINGTON.



INTERIOR OF ENGINE ROOM.

Granite.

BARRE, VERMONT.

BARRE, Vt., February 28.—The most important thing that has happened in Barre granite circles during the past month was the meeting of the stockholders in the Barre Granite Manufacturing Co., on the evening of February 8. This company was the organization that was formed for the purpose of placing an exhibit at the St. Louis Exposition. The meeting was presided over by the president, William Barclay, and Secretary William Marr read the report of the trustees who have managed the project from its inception. These trustees are: William Barclay, F. G. Howland, W. S. Alexander, D. M. Miles, John E. Smith, William Marr, H. J. M. Jones, J. A. Cross, Frank Burke, D. F. Ryle and George Gray. The report shows that the subscribers will receive 85 per cent. of the money invested in the enterprise. The trustees, in this report, thank all those who loaned their assistance to them in any way.

In giving a history of their various transactions in relation to the selection of designs for the work to be placed on exhibition, they say: "This we desired should be of a representative character, showing the adaptability of Barre granite to all kinds of monumental work. In this choice we had eight monuments, six tablets or grave markers, four vases and two balls. We showed statuary, different styles of carving, plain hammered and all polished work, together with the round turned work, polished and hammered. The aim was to have all the different shades of Barre granite shown to their best advantage, and great care was taken in selecting the designs, with this end in view, as well as to have the proportions as nearly correct as possible. As soon as any of the designs were chosen we sent out tracings from twenty to thirty different dealers, whom we believed could and would make us a monument that we could look upon with pride. We then selected a committee of five to select the work that was presented. The next problem we had to face was the disposition of our work at the other end. We believe that the most beneficial way of handling our exhibit was to have some retail dealer whom we could put reliance on, take care of it for us during the time the fair lasted, and to relieve us of it at an agreed price when the fair closed. To provide against jealousy among the retail dealers and to use them on an equal footing, we wrote to from twenty to thirty different ones, asking if they felt disposed to entertain such proposition, or if they cared to make any to us. To these letters we had a few replies. Some did not make any answer, and we came to the conclusion that we could make the best deal with the Rosebrough Monument Co., of St. Louis, and an agreement was made with them whereby they assumed the expense of preparing the space, of setting up the work, distributing our booklets in a judicious manner, and of properly looking after the exhibit during the time the fair lasted. They agreed to pay us \$6,125.00 for the work, while we agreed to give them the right and privilege of showing their designs and photographs, and of distributing their business cards. We know we have been criticised in the methods we have taken, but if we had followed the suggestions offered we are persuaded there would have been just reason for criticism. On October 24 we received notice that our exhibit had received the Grand Prize, the highest award we could get. In justice to Mr. Rosebrough and ourselves we feel that we should say a word of rebuttal against the criticism we have heard. In the first place Mr. Rosebrough was given positive instructions not to tell who cut this or that monument, or whose stock the different pieces were made of, as this exhibit was not gotten up to advertise any individual or any firm, but Barre granite only. As to the

other phase of making our exhibit more extensive and sending a man from Barre to care for it. Some people must think the citizens of Barre have lots of money to spare. Had we followed this course it would not only have cost us much more money here, but the expense at St. Louis would have been heavy, and the chances are that we would have been liable to have had the whole outfit on our hands at the close of the fair and been at the mercy of the retail dealers to relieve us of our own work at their own price. For, if we had tried to sell any one who was not a retail dealer during the fair we would have received severe censure from the retail men."

Frank H. Hopkins, formerly of the granite firm of Hopkins & Huntington, died on February 13, of a lung trouble. He had been in poor health for a long time.

G. H. Githens, of Boston, the New England representative of the Ingersoll-Sergeant Drill Co., was in town several days this month.

A Thirty Carload Order.

The Innes & Cruickshank Quarry Co. are pretty busy this spring, among the work they are getting out being a 30-carload lot of stock for Leland, Hall & Co., who have the contract for a big mausoleum.



W. S. ALEXANDER, SECRETARY OF THE NATIONAL GRANITE ASSOCIATION.

The Harrison Supply Co., of Boston, makes the important announcement that W. H. Pitkin & Co. will in the future represent the company throughout Vermont and carry a full and complete line of their granite polishers supplies. Forsyth & Ingram, of Barre, formerly represented the Harrison Supply Co. in Vermont.

Charles R. Scott, of the wholesale granite firm of Scott & Townsend, was united in marriage February 14, to Miss Stella A. Crandall, of Berlin. They will reside in Montpelier.

Cold Weather and Big Orders.

Alderman F. H. Burke returned from his western trip with a pocket full of orders for Burke Bros. Mr. Burke had some disagreeable, as well as some pleasant experiences. He ran into the blizzard between Pittsburg and Philadelphia and was hung up over night while old Boreas made him think he was really up in the Green Mountains again.

Hold Annual Meeting.

The annual meeting of the Granite Quarry Owners' Association was held recently in their rooms in the Miles granite building. The following officers were elected: President, George Gray; vice president, William Marr; secretary, William Barclay,

Jr.; treasurer, J. W. McDonald; executive committee, George Mutch, Alex Innes, J. K. Pirie; arbitration committee, D. W. McDonald, George B. Milne, Donald Smith; house committee, J. M. Boutwell, H. J. M. Jones, John E. Smith; auditors, Alex Milne and C. E. Lowe. After the election refreshments were served and an enjoyable smoke talk held. The guest of honor at the latter was W. S. Alexander, president of the Granite Manufacturers' Association.

It was a startling announcement to the granite trade on February 13, when it became known that the partnership between Joseph B. Reinhalter and D. M. Miles, doing business under the firm name of the Reinhalter Granite Co., had been dissolved. Mr. Miles becomes sole owner of all assets, accounts, demands and property belonging to the firm and will pay all bills. There is a large amount of big work under the hammer at the plant at the present time and Mr. Miles will continue to conduct the business for the present, at least, with the services of experienced men in his employ. Mr. Reinhalter has packed up his household belongings and gone to New York. His plans for the future are not made known at the present writing.

State Geologist's Report.

The fourth annual report of Prof. G. H. Perkins, State geologist of Vermont, contains many valuable facts. Prof. Perkins says in his introductory: "The very large sums of money invested in the quarries of Vermont are sufficient indication of their importance. For twenty years the value of the product of the quarries has steadily increased. Taking in 1880 as a starting point, the total value in that year of the principal products of Vermont quarries was \$1,757,283.00. In ten years the amount had increased to \$3,593,449.00, more than doubled in the decade. In 1900 the valuation was \$4,516,102.00, an increase of more than a million dollars in ten years. But if that gain is gratifying, the report of the two years from that date to 1902 must be very much more so, because the gain was \$1,100,000.00, equal to the whole increase of the ten years just preceding. Prof. Perkins thinks that during 1903 there was not less than seven million dollars worth of stone quarried and sold in the state. He estimates the amount of money invested in the stone business to be \$12,000,000.00, and that there are 10,000 persons employed in connection with the same. These figures are for the principal stone industries alone, not including soapstone, limestone and sandstone for building purposes.

One hundred and sixty firms are engaged in the business here, including Montpelier, Northfield and Calais, and there are elsewhere about forty more, bringing the total up to 200 engaged in the granite industry. He sent out queries to all of these firms and received replies from only fifty. One these replies he was compelled to make up the estimates for the year; and he concludes that there is invested \$3,525,000.00; that 3,364 men are employed and that the total output amounts to the sum of \$4,167,000.00. These estimates are probably very conservative and might have been made a little larger while still adhering strictly to the true situation. At any rate, it shows the remarkable stride that Barre granite has made since it first made its debut in the monumental and the building world. The same may be said of the granite at Woodbury, Hardwick, Calais and other places of the State.

George Duncan, of the North Barre Granite Co., has been confined in the hospital several days this month, having a piece of steel extracted from his left arm. The steel flew from a bull set and lodged in the bone of his arm. About a year ago he had his right arm injured in the same way.

James Pirie, the inventor of the famous Pirie tool sharpening machine, committed suicide at his home in Montpelier on the evening of February 21. Despondency, due to ill health, was the cause of the act. He has been dying of consumption for a long time and could have lived but a short while longer. He told the writer last summer that all he prayed for was to be allowed to live until the success of his tool sharpening machine was assured so that he might know that his family would be well provided for, and then he was ready to die. It was a very sad case, for Mr. Pirie was a most lovable man. He did live to see his machine a success. Eric Pirie, who has been of great assistance to his father in perfecting the design, is now building the machine which is to be installed in the new plant being erected for the purpose. The deceased was born in Aberdeen, Scotland, 49 years ago. He came to this country

when fifteen years of age residing in Washington, D. C., then Quincy, Mass., Baltimore, Barre and finally Montpelier. In Barre he conducted a small granite business, being himself a skilled cutter and especially proficient as a carver. Ten years ago he moved to Montpelier and continued the same business there until four years ago, when poor health forced him to retire. He leaves a wife, two sons and two daughters.

The firm heretofore known as Pellegata, Mangaghi & Galli, has sent out notice to the effect that the firm name has been changed to Magnaghi & Galli. Mr. Pellegata remains in the firm, but the name is omitted for the sake of brevity. They are cutting now one of the finest medium sized monuments that has been cut in Barre in a long time. The bottom base is 5x3 ft. 11 in. There are three bases, die, plinth and cap. It will take one man two months to cut the cap alone. It is of sarcophagus form and is elaborately decorated with moulding and carving. The monument is to be set up in New Jersey.

Have Increased the Force.

C. W. McMillan & Son are cutting a lot of work now, including a good sized vault. This large polishing plant is being crowded to its utmost capacity. They have just increased their working force and everything is on the jump.

I found the Young Bros. happy with plenty of work to do. They had just leased a plot of land near the cutting plant to the Pirie family, who are to establish a tool sharpening plant there as soon as possible, by installing one of their machines. There are several firms in that vicinity who will profit by the installation of the machine.

Stephen & Gerrard have just completed the 60-foot addition to their cutting plant and will put twenty more cutters to work at once. They have just received two large jobs, in addition to their other work, that will make immediate use for the extra space which the new addition gives them.

A. Anderson & Sons are doing the same fat business which they have been doing for several weeks, and they are sure of a prosperous summer.

Manager N. D. Phelps, of the Barre White Granite Co., reports business good at the quarry. They are very busy there at the present time.

Business Steadily Increasing.

There has been a most remarkable growth in the demand for Barre granite during the past few years, and that demand has had a more rapid increase during the past year than it has had during any one year of the history of the Barre granite industry. A trip among the "bull set" men of the Barre district, which includes Montpelier, Northfield and Williamstown, finds them all happy at the amount of orders they are receiving. Of course they all have the same cry about low prices and about the manner in which their competitors in the next office are cutting prices, but speaking generally, of the Barre granite, the market for it has grown by leaps and bounds in every section where it has been introduced. Other granites have their special field. Barre granite has one also. For all around work it has no fear of competition.

Entertains Associations.

The officers of the Barre Granite Manufacturers' Association and the Quarry Owners' Association were very pleasantly entertained on the evening of Washington's birthday, at the home of John W. McDonald, of McDonald & Cutler. A banquet was served and the evening passed very pleasantly and profitably.

There has been no meeting of the Manufacturers' Association as yet to take action on the matter of the National Association, and yet it does not follow that they have forgotten it. They are thinking about it and the probability is that the association will, before long, see the importance of a national organization.

Wilson Bros. are getting pretty well settled in the plant to which they moved a few months ago, and their business is rapidly growing. Among other nice work that they are cutting is a beautiful cross. The base is adorned with a carved emblem in the form of three flags interlaced. The die is polished. On the base of the cross, which surmounts the die, is considerable carving raised on panels. Two hands grasping a goblet are carved in exact imitation of the life-like, and above this is represented the setting sun. The polished surface of the cross contains elaborate tracing.

McDonald & Buchan, who are known as one of the big concerns in Barre, report more medium sized work at the present time than they have ever had, and although they have recently cut



W. H. PITKIN, BARRE, VT.,
VERMONT REPRESENTATIVE HARRISON SUPPLY CO.

some elaborate monuments, they have no job of particular note at the present time.

A Unique Mausoleum.

Barclay Bros. are working upon a large mausoleum of unique design and elaborate workmanship. It will require a special car for the roof stone alone, and another one for the floor stone. The vault is of massive construction, containing very few pieces and these being of large proportions. The floor and roof stones are each in one solid piece. The joints are all dove-tailed. Fluted pilasters adorn the front corners with the beauty of hammered Barre stock and carved caps. The vault is a unique conception. The outside is all hammered and the inside, wherever it can be seen, is polished. Nothing but Barre granite is used in the entire construction, the catacomb shelves, divisions and seal plates all being of Barre stock rabbited and dovetailed together. The vault goes to Pennsylvania. Barclay Bros. are about to begin work on another large vault for New York parties.

Robins Bros. find time to handle a shed full of work, notwithstanding the fact that the senior member of the firm, John Robins, is one of the leading candidates for Mayor at the coming city election. I noticed in the cutting plant two roof stones and a ridge stone each 16 feet in length, that are to become a part of a large mausoleum which they are getting out.

Among the varied assortment of work at the plant of J. P. Corskie & Son, is one particularly fine job for the Western market. The bottom base is 14x9 ft. There are three bases, the third one moulded and carved. There is a four-column die containing a carved panel on the front with raised round letters. The plinth is moulded and the cap is carved and moulded. There are four pediments.



INTERIOR OF MAGNAGHI & GALLI CUTTING PLANT, BARRE, VT.

Bugbee & Alexander are cutting several nice jobs at the present time. One fine monument is lettered "Alexander." This is not Will Alexander. It is a die job all hammered. On the front of the die the name is carved in old English letters, raised and set off with an elaborately carved festoon underneath and at the sides. Near this one was another die and cap job all cut solid in one piece. Sunk panels and a beautifully carved cap made it very attractive.

Littlejohn & Milne have their large plant full of mammoth jobs in process of construction. Among these is a big die job for Dayton, Ohio. The bottom base is 12-1x9-10. There are three bases. The die is moulded and carved. Its dimensions are 5-8x7-11x4-9. It contains four pilasters moulded, while the body of the die is carved. The two caps are also carved. The monument is to be surmounted by a bronze statue of the millionaire brewer to whom it is dedicated. Between the feet of the statue is a small keg as an insignia of the industry engaged in. The block of granite from which the die was cut weighed 25 tons and was brought from the Littlejohn & Milne quarry by team in half a day.

The Smith, Whitcomb & Cook Co. have just shipped two polishing machines, one to Gallagher & Co., and the other to Frank Maber, of Philadelphia. Also two machines to Quincy, Mass., one to Angelo Malnati and one to J. S. Swingle.

Jones Bros. Co. have just taken orders for three new mausoleums, one \$11,000.00, one to Saginaw, Mich., containing ten carloads of granite, and another one for Kansas City parties. The latter will fill about six cars.

Rizzi Bros. have about their usual amount of high class carving work on hand. They occasionally get an order for the peculiar design known as a "grave cover." They are cutting a nice one now with the scroll effect, moulded and carved with ivy leaves.

At the plant of Novelli & Calcagni, the latter is still running the place alone, but he expects his partner, Sam Novelli, the famous sculptor, to return from his extended visit in Italy so as to be in the shed again during the first week in April. They are cutting many fine pieces of statuary, but the one perhaps to attract the greatest attention from the casual visitor is a piece of high relief statuary that is going to Evansville, Ind. There are two bases, the bottom one being 9-2x6-6. The die is six feet high and on the front is a human size figure of Gabriel blowing the trumpet, and the hand resting on the shoulder of a kneeling figure. The plinth and cap are both carved. They are cutting another beautiful job of a rock face design with a column cut in the corner and carved with ferns and roses and overrun with an ivy vine. The name is carved on a rustic panel.

The New Association Secretary.

William S. Alexander, for nearly four years the efficient president of the Barre Granite Manufacturers' Association, and a man whom everybody swears by within his own balliwick, has accepted the position of Secretary of the recently formed National Association of the Granite Industries of the United States. No better man for the office could have been found anywhere, and this primary move on the part of the directors in securing such a man assures the success of the association. Mr.

Alexander's experience, his tact, his unusual integrity, and his energetic way of handling such a proposition makes one thing certain, and that is, if he can't make the organization succeed, no one can. He is now in the fourth year of his presidency of the Barre Association, and the latter is to-day in a state of perfection that was little dreamed of in the early days. He has weathered many storms in the association since being at its head, having been president during the period when the famous Granite Exchange was in existence, and he has brought them through everything, always standing as the clear-eyed pilot at the wheel during the fiercest storm, and while the panic rages wildest among those he has on board. Mr. Alexander came to Barre in 1886 and in 1892 formed a partnership with A. E. Bugbee in the granite manufacturing business, under the firm name of Bugbee & Alexander. Before accepting the position which he has just taken he severed his connection with the firm so that he can devote his entire attention to the secretaryship. His office will be in Boston, arrangements for the securing and fitting up of which are now in the hands of the directors. Mr. Alexander assumes the active duties of the office March 1. He has also resigned the presidency of the Barre Association, although he still retains membership in the organization. So far as outlining any method of procedure is concerned the new secretary takes the course of wisdom when he says he can have nothing to say about that at the present time further than that he will attempt to lay the situation before every granite manufacturer of New England as soon as possible, in such a manner that all will understand the importance of the movement that is in progress.

Matthew Haley, the well known derrick builder and setter, has now a permanent address at Barre, Vt. Mr. Haley is building a large number of boom derricks this spring. He has built and set up some of the largest derricks in the business.

E. L. Smith & Co. have been able all winter to supply the demand for all grades of Barre rough stock. They are also keeping their force of men busy in the cutting plant with various monuments of all sizes. Donald Smith was one of the Barre manufacturers to attend the recent annual meeting of the National Association of the Granite Industries of the United States, at Boston in February.

Clark Thom & Co. have a shed full of nice carved work and Mr. Thom says orders are very plentiful this spring.

J. A. Martinson is cutting a lot of nice two piece designs in polished work with tracing. John makes a big run on this class of work.

Mortimer & Campbell report business as exceptionally good this spring. They are cutting one specially fine monument. It is a two base, concave die and carved cap design. The cap is elaborately carved and gives a very telling effect.

MONTPELIER, VT.

MONTPELIER, Vt., February 23.—The granite industry in Montpelier looks very promising for the coming season. The manufacturing plants, which number about 28, are receiving a plentiful supply of orders from all parts of the country, for spring and summer shipment. Every day many carloads of rough stock come in from the Barre quarries. More than the usual number of cutters are employed and most of the firms are about to put on more men in March.

F. J. Robar has purchased of J. D. Clogston the stone shed formerly owned by the Kane Granite Co., which Mr. Clogston purchased of the trustees. Mr. Robar was formerly in business with Robar, McGaren & Co., in the Kelliher shed on Main Street.

Thomas F. Lynch, a pioneer in the granite industry of Montpelier, died on the morning of February 4, of heart trouble, aged 39 years. The deceased was born in Moretown, Vt. He was a brother-in-law of D. F. Ryle, of the firm of Ryle

& McCormick. Four years ago Mr. Lynch built the large stone shed which was sold last year to Ryle & McCormick. He came to Montpelier when 16 years old and began to learn the trade of granite cutter. He afterwards went into the business under the firm name of Lynch Bros.

F. J. Robar has a remarkably fine shed in the recently built Kane plant, which he has just purchased. He was getting ready to open up for spring work when I called and as soon as the quarries let down a little more stock Mr. Robar will take his place as the head of a busy concern.

Dillon & Haley have more big monumental work on hand at the present time than ever before in their history. In fact, the visitor glancing through the plant this month would be astounded at the sight of the mammoth blocks of granite that meet his gaze. They are at work on one die that weighs 27 tons. This job goes to Syracuse, N. Y. It consists of four bases, the die, plinth and cap. The bottom base is 10 ft. square and the die is 7 feet high. The monument is all hammered and there is a lot of carving on the die and cap. Another attractive job they are cutting is a spire monument. The shaft is 25 feet long and 2 ft. 6 in. square at the base.

Ryles & McCormick have sent Mr. William Adams on an extended trip among the retail dealers, leaving Montpelier, March 1.

D. F. Ryle has recently been appointed administrator of the Lynch Bros. estate and he requests that all correspondence relating to the estate be made to him.

I found the boys at the Globe Granite Co. much pleased with the business situation. They have just put on five additional cutters, and if the orders keep coming in as fast as they have been doing lately, they will have to put on more men in a few days.

The mammoth plant of Sweeney Bros. is full of work, a veritable hive of industry. One of the most noteworthy jobs they have under the hammer at present is a monument for Gen. Ruggles, father of Mrs. Phil Sheridan. This is to be set up in the National Cemetery at Washington, D. C. The work is all hammered and is of sarcophagus form, with much carving at appropriate points. The base is 6 ft. by 4 ft. 6 in.

One of the most attractive statuary designs that have been seen in this locality in a long time is an entirely original one that is being cut at the shed of Bonazzi & Bonazzi, after a model and design by E. Bonazzi, one of the firm. The monument is to be set up at Joliet, Ill., within sixty days. The two bases and die are all rock face. On the die relief is carved a representation of the Virgin at the Shrine. It gives a most beautiful and artistic effect. The bottom base is 5x2-10x4. The die is 4 ft. 6 in. high.

C. P. Gill & Co. report business very good. They have had no trouble in getting plenty of stock at short notice whenever required all winter. They got in a good supply of dark stock before the cold weather set in.

Frank Doucette, of Doucette Bros., informed me that they have in their employ the best carvers they ever had. The firm makes a specialty of lettering and carved work.

Charley Ryle, of the Columbian Granite Co., reports plenty of work of medium size, and everything is running smoothly.

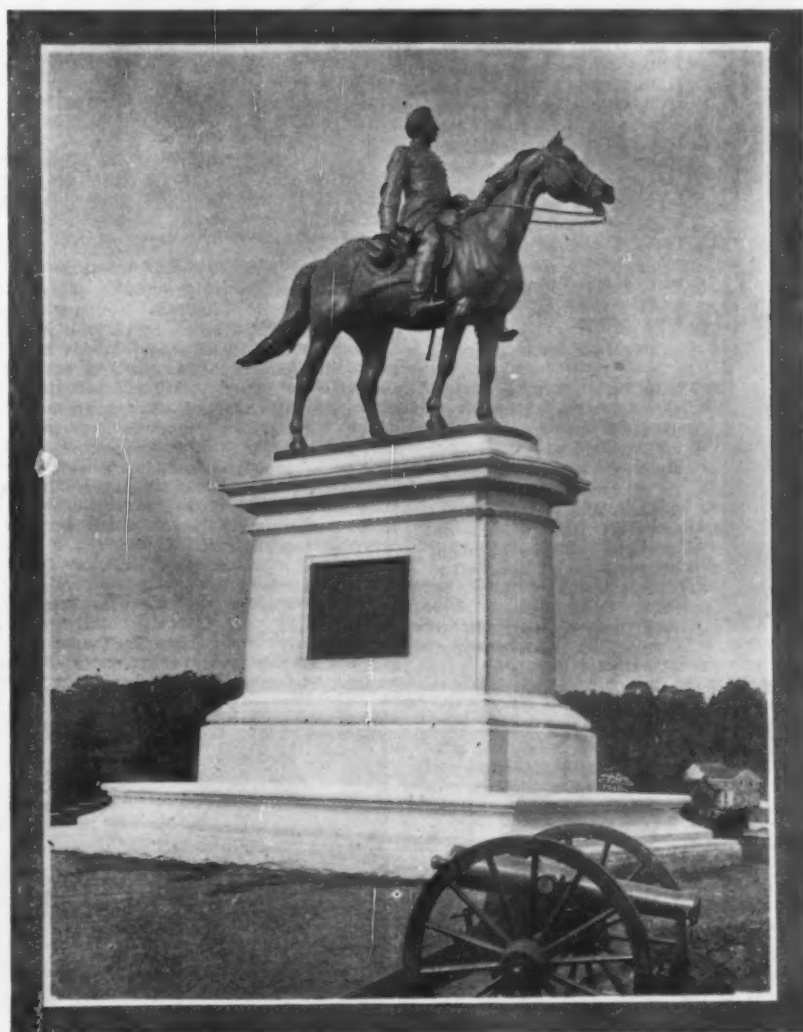
R. M. Fraser is one of the veterans in the granite manufacturing business and gets out a fine class of work. He prefers to turn away orders and employes, if necessary, rather than take work in which there is not a living profit. A fair profit is always conducive to satisfactory work.

H. J. Bertoll is cutting several large statues, and sees a splendid business prospect for the summer. He expects to have the Caesar Young monument completed in about two weeks.

Anticipating a Good Trade.

This is rather the quiet season with the Lane Manufacturing Co., in their traveling crane department, as everybody in the granite business is too busy getting out Memorial Day jobs to think of improving his equipment in any way. Mr. Pitkin stated, however, that they are in communication with several of the cut stone contractors in regard to putting in cranes and they expect to do a big business with the soft stone people this summer.

J. M. Boutwell, of the Boutwell-Varnum Co., who own the famous dark quarry at Barre, stated that the quarry did the biggest business last month that it ever did before in any one month of its history. The ex-mayor is patiently waiting for the fading away of the Vermont winter so that he can try his new Packard automobile.



A GETTYSBURG BATTLE MONUMENT, CUT BY LITTLEJOHN & MILNE.

NORTHFIELD, VT.

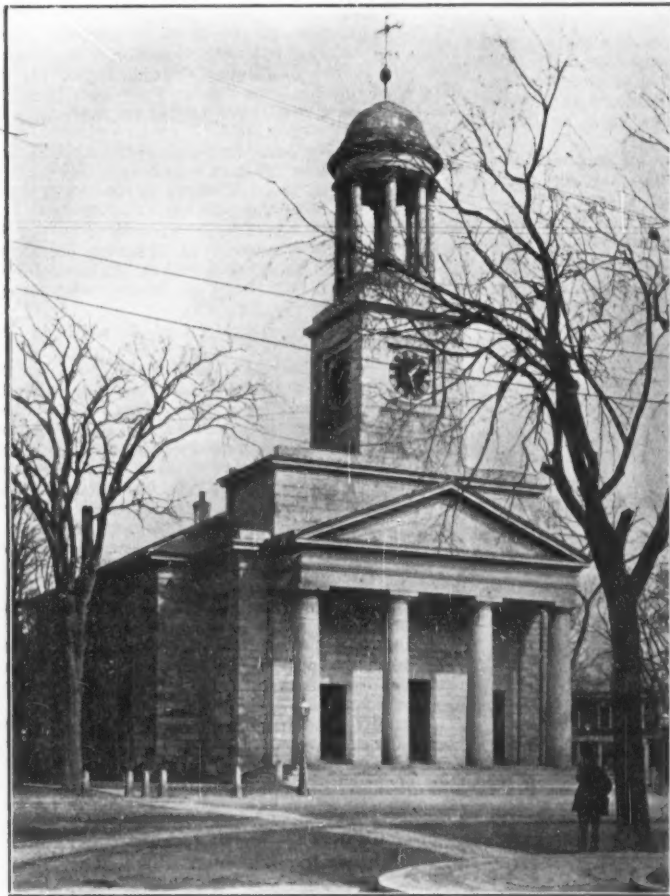
NORTHFIELD, VT., February 24.—The E. B. Ellis Granite Co. has recently issued notice that it has registered the trade mark "Bethel White Granite," under the laws of the State of Vermont and of Illinois, and other companies are forbidden to use this name.

P. D. Pike, manager of the Vermont Black Slate Co., has been away on business for the company in New York and Washington for the past two weeks.

The plant of P. Brusa & Co. shows a healthy condition, with plenty of work and some nice statuary in process of construction. Among these is the statue of a Civil War soldier that is to be set up before Memorial Day as a soldier's monument. The Brusa firm make a specialty of statuary and carving.

Devine & Burns have a yard full of rough stock and seem to be able to handle anything of small or medium size on short notice. They have their own polishing mill.

George Cross, of Cross Bros., report business as very good this spring. The big monument mentioned last month is the most notable one that is now being cut in the shed, but there are several very attractive pieces being constructed aside from this.



ADAMS TEMPLE, QUINCY, MASS.

C. D. Edgerton, of the Northfield Slate Co., is quite hopeful about the company's getting together for business this spring. They have certainly got a good proposition in the way of a quarry. The stockholders were to meet this week, but several of them were ill and the meeting had to be postponed, but something will be done within a short time.

At the plant of the Cannon & Slack Co. there is plenty of work of ordinary size. They have eight carload lots to get out about March 1, each of them consisting of attractive two piece designs with a few others of larger proportions. Tom Cannon has been ill for a few days. Their shed is to-day a little more than twice as large as it was one year ago at this time, and business is enough better this year to keep the whole plant running nearly to its full capacity. Their two polishing machines are kept busy all the time.

QUINCY, MASS.

QUINCY, MASS., February 11.—Quincy granite has a place by itself in the monumental world for its own class of work and in small and medium designs of traced work, and sunk letters on polished surfaces it is an acknowledged fact that it has no rival.

Other granites have their own special places in both the architectural and the monumental world, but any one who has ever seen the unfading contrast between the beautiful richly colored polished surface of Quincy granite and hammered lines traced upon it, must be impressed by its effect, and at a single glance be able to understand why it is that this product of the historic town of Massachusetts is so widely known.

The first building of any architectural pretensions constructed out of Quincy syenite, familiarly called Quincy granite, was King's Chapel, erected on the corner of School and Tremont Streets, in Boston, in 1752. This church was built of coarse, rough boulders, scattered about and dug out of both the north and south commons. The method of splitting this material for the construction of this church was in the most primitive and curious manner.

It was accomplished by heating the stone, by building a fire upon it and then letting a large iron ball fall upon it. Some time after this the disposing of so many of these boulders became such a universal topic of conversation that the inhabitants passed an ordinance forbidding any person from removing these boulders under a penalty of ten shillings for each cartload. The land from which the stone was being taken was at that time town property, but in 1762, owing to the dissension which arose over the matter town sold the property to private parties.

Not much thought had been given to the stone quarries until the early part of the 19th century, when several parties opened quarries for getting out small blocks to be used in foundations.

First Used in Bunker Hill Monument.

In 1822 the question began to be agitated in regard to erecting a monument on Bunker Hill. Solomon Willard was selected by a committee chosen to promote the project, as the architect, and it was decided to build a monument in the form of an obelisk. This was on October 31, 1825. Mr. Willard, who was not a resident of Quincy, set about to find a suitable material with which to build. He finally decided that Quincy granite was the best.

It was through this contract that the first railroad was built in America. This road was constructed for the purpose of more rapid transportation of the stone to Charlestown, where the monument was set. The whole cost of the monument was \$103,963.68. The height is 221 feet 5 inches. The ground space covered by the bottom course is 30 feet square. The bids presented at first for furnishing the stock were at 62 cents per foot, but Mr. Willard succeeded in getting it out himself for 13 cents per foot. Many other noted structures were erected of Quincy stone at about this time and they are standing as fresh and intact to-day as they were on the day of their completion. The Granite Railway Co., which still holds a prominent place in the stone trade of Quincy, was doing business at that time.



CUTTING SHED OF SANDEN & MORRISON AT QUINCY, MASS.

In later years a large portion of the Quincy syenite came to be used for monumental work. So noted has it become that samples of it can be found to-day in nearly every important cemetery of the United States, and much of it has been sent to South America and to Europe.

The first experiment of splitting stone by use of wooden wedges soaked in water and allowed to swell was made in 1803.

About the year 1831, Joseph Richards invented the bush hammer. This now useful instrument was patented and made by Mr. Richards in a different manner from the tool now in use, however. The one he manufactured was all in one piece. Mr. Richards was also the first to suggest, construct and utilize the Louis hole for blasting purposes, which process causes the stone, by means of a series of several drill holes, to split in any given direction.

The idea of polishing Quincy syenite came to the Quincy manufacturers about 35 years ago. This custom of polishing syenite is a revival or restoration of the Egyptian system of embellishing their syenite, which is as old as the everlasting pyramids and monuments. The polished surface is much more beautiful and much more durable, as the surface is thereby rendered perfectly impenetrable to the disintegrating elements and the ravages of time, as may be seen in the beautiful specimens of polished syenite of ancient Egypt, which still retain the original polish and color unimpaired.

One important feature of all these quarries in Quincy is that the deeper they are worked the closer is the texture and more permanent and durable the color of the material. Some of them have been worked to a depth of over 200 feet.

Only Deposit of Monumental Syenite.

Quincy has the only deposits of syenite in the country that is produced for monumental purposes. Under normal conditions nearly three thousand men are employed in the industry, and while the average cutting plant is not as extensive as some in other localities, yet they are well suited to take care of all monumental work for which the Quincy stone is especially adapted. The hardness of the stone makes it rather expensive in quarrying and is therefore not used in building as often as softer stone. In memorials, however, destined to last for centuries as evidence of the country's greatness, Quincy asks for a much deserved recognition.

The old stone church built of Quincy stone, nearly a century ago at Quincy, might be taken for a new building by one who doesn't know its history.

The Quincy men have the same trouble that prevails among monumental manufacturers everywhere. Too much throat cutting in prices.



POLISHING MILL, JAMES CRAIG & CO., QUINCY, MASS.

A Veteran Granite Man.

T. F. Mannex, one of Quincy's most popular veterans of the stone business, is a whole souled man. He operates an up-to-date cutting plant and two splendid quarries. He took a walk with me through some of the quarry districts a few days ago and we saw a great deal of splendid stock that has been taken out of this Quincy quarry. He has just struck a vein of the best dark stock that has ever been taken from the quarry. The quarry is in fine shape now and there is enough stock uncovered and ready to take out to keep them busy for at least a year.

T. J. Dunfee, of the Quincy Quarries Co., and a former secretary of the Quincy Granite Manufacturers' Association, realizes the need of more unity and centralization of interest on many points among the Quincy men. There ought to be a complete elimination of petty jealousies and more "professional courtesy" shown toward one another. It seems that a revival of the old "Confidential Record" that was published a few years ago for the mutual protection of those engaged in the Quincy industry would be a great advantage to the trade, providing that they have all learned a lesson by past experience in connection with this project.

Hughes & Johnson have a lot of nice work on hand, the principal job being an Elks' monument for M. V. Mitchell & Son, of Columbus, Ohio. The bottom base is 8x5-3. There are two bases with a die moulded and polished on the four sides, all of it being cut in extra dark Quincy stock. The die is surmounted by the statue of an elk. The monument is a very beautiful work of art.

McDonnell & Sons showed the wisdom that has marked the progress of this firm during its many years of existence when they secured the services, a few years ago, of George Ruxton as manager of their Quincy cutting plant. Mr. Ruxton has a fine system of doing business and gets out a fine class of work. Among the leading jobs they have at present is a large sarcophagus to be set up in Calvary cemetery. The bottom base is 12x8 ft. The base, die and caps are carved and polished. The stock is Quincy medium.

Joss Bros. have an up-to-date plant and hold a reputation for getting out first class work. They are getting out now one of the neatest jobs that can be found in Quincy. It is a carved cross cut in Westerly stock. Every spot of the entire face is beautifully carved in original design. Joss Bros. have recently put in a 125 h. p. boiler. They run seven polishing machines and operate two traveling derricks.

Mayor James Thompson, chief executive of the city of Quincy, and the head of the well known granite firm of John Thompson & Son, is a man of progressive ideas and his conversation shows the effect that a life experience in the granite business and the insight of a progressive mind can give. Mayor Thompson has the history of the Quincy granite industry at his tongue's end, and the hour I spent with him recently was profitable and entertaining.

Alexander Clark is a man pretty well known in the granite world. He has manufactured tools for the granite cutting business for many years, and when I asked him if he didn't feel a little blue about the present labor situation in Quincy he said he hoped to get enough work sent in from other parts of the country to keep him busy in case there should be a strike in Quincy.

Angelo Malnati cuts all classes of work, but that which particularly attracts the eye of the visitor is the abundance of beautifully carved monuments about the premises. He has just been getting out some especially nice work in both Quincy and pink Westerly stock.

At the plant of Kemp & Mundie I had a nice chat with Mr. Mundie who took me through their modern cutting works and showed a very attractive line of small and medium sized work under the hammer. Besides a large amount of beautiful polished, traded and lettered work in dark Quincy stock, I noticed some very neatly carved work in Chester granite.

An Historical Railroad.

The Granite Railway Co. has a history covering seventy-seven years of successful business, and although I was unable to see the hustling manager of the concern, Mr. Anderson, I hope to do so at a later date and have something more extensive to say about this famous company. I visited their quarries, however, and was astounded at the mag-

nitude of the operations that have been and are being carried on upon the property.

Another immense quarry in that vicinity, aside from the Mannex property already mentioned, is the Swingle quarry, formerly owned by Swingle & Falconer, but now operated by Mr. Swingle.

At the plant of James Craig & Co. I found Mr. Craig wandering about in a maze of new machinery that had just been set up and which was then being started for the first time. This firm has just completed the most extensive additions to their plant that have been made anywhere in Quincy for several months at least. They have built a large brick engine house and polishing mill and equipped them with new machinery of the latest patterns, including a Putnam engine, boiler, Smith valve, air compressor and two Smith, Whitcomb & Cook Co.'s polishing machines. Mr. Craig has been in the granite business in Quincy for twenty-five years. He was formerly president of the Craig & Richards Granite Co., but six years ago he separated from that company and went into business by himself. Two years ago Niels Carlson became associated with him and they are now doing business under the firm name of James Craig & Co. They sell to retail dealers from their own manufacture, statuary, monuments, and headstones of all kinds of Quincy granite and of pink Westerly.

At Prout Bros. plant the yard was piled up with a splendid lot of small finished work. Dick Prout said they had been having much trouble in getting the stuff shipped this winter on account of the extreme cold weather, causing a difficulty in handling it.

At the Quincy Column Turning Co. everything was booming. Alexander McWilliams, the manager, was not in, but the employees showed some very elaborate work that is being cut there at present. Chief of all are four mammoth sectional columns that are being turned and polished from Cape Ann stock. Each column is in three sections standing when completed 29 feet 6 inches in height. The diameter at the base is 4 ft. 3 in. and the top section is 3 ft. 8 in. at its base. There were also a lot of urns and vases in process of construction. The company is just getting ready to install a new traveling crane, built by the Lane Manufacturing Co., of Montpelier, Vt.

Souden & Morrison have a neat and business like appearing plant and both parties are a very genial pair of gentlemen. They have recently finished building a new addition which makes the shed considerably more than twice as large as it was before. In the addition they have a very ingenious ventilating device for summer use, where by the pulling of a series of ropes the entire sides of the shed in sections may be raised perpendicularly out of the way at a moment's notice, affording good air and light. The firm does a great deal of carving and lettering.

Milne & Hector have just built forty feet of addition to their plant which consists of two straight sheds with a yard between. A new traveling derrick runs lengthwise between the two buildings. The firm has just taken an order for a very beautiful monument of unusual design to be sent to New York. The bottom base is 9 ft. by 5 ft. It is all polished and adorned with square sunk letters, giving a very telling effect.

At the big establishment of A. M. Deane & Co., Mr. Deane was busily engaged in untangling some troubles out in the cutting plant, but I saw Mr. Pierce in the office. Business is very good and Mr. Pierce thought that were it not for the expected labor difficulties on March 1, that Quincy would have more business this spring than ever before.

Joseph Bishop, of Intervale Street, has some very nice work on hand and his excellent reputation for always giving his customers a square deal will insure him plenty of work as long as he wants it.

Labor Situation.

The granite cutters' demand of a \$3.00 per day minimum wage is almost three months old, and, notwithstanding several conferences have been held between the interested committees, no definite action has been taken. Some weeks ago the manufacturers offered to submit the differences to arbitration, the men to continue work pending the decision. This offer was summarily turned down by the union, and ever since conferences between these committees have lapsed. Not so, however, with the quarry men's union. The differences here have been settled to the satisfaction of both parties. The men will receive an average wage of 26 cents per hour, nine hours to constitute a day's work. The trouble with the engineers

and their demand for higher wages, will be decided by arbitration. Thus the industrial atmosphere has been cleared somewhat, but the backbone of the granite trade, the cutters and tool sharpeners, have yet to be dealt with. The conferences with the latter were devoid of result. Unless the unexpected happens there will be a general tie up in the granite trade. Some of the large concerns will be particularly hard hit in the event of a suspension of work. There are a number of such concerns in the city that now pay the bill and have none in their employ who receive less than \$3.00 per day. It remains to be seen whether or not these firms will stand by their smaller competitors, in what promises to be the greatest labor struggle which has yet visited the trade.

Aside from the threatened difficulty with organized labor, business has been unusually brisk. The manufacturer has been on the alert to finish every available job prior to March 1. This has necessitated the polishing mills working over-time, and to date it looks as though the decks are cleared for action and that a long struggle will ensue. The manufacturer has held aloof from figuring on work calling for delivery after March 1, which is to be regretted, as there is a bulk of work to be figured upon for spring delivery.

John Johnson, proprietor of the Nollaston Granite Works, was found dead in his office on the morning of February 10. Deceased had been under a physician's care for heart trouble and it is thought that the fatal attack occurred when he was about to commence his day's work. Mr. Johnson was little known among his associates, of a reticent disposition, he mingled little with his co-workers in the trade and seemed to devote all his time to business. He was 45 years of age, and is said to have a sister living in Virginia.

J. Nellington Field, son of J. Q. A. Field, of the firm of Field & Wild, met with a violent death in Dorchester, Mass., Saturday evening, February 25. He was driving a four-horse load of stone, when in some unaccountable manner, he fell from his seat. Before the horses could be stopped the forward trucks of the dray passed over his neck, almost decapitating him. Death was instantaneous. He was 41 years of age and was identified with the trade for a number of years. His father has the sympathy of the community in his keen bereavement.

Kavanaugh Bros. Co. has become incorporated under the laws of Massachusetts. Alexander Falconer, late of the firm of Swingle & Falconer, is president; Henry Kavanaugh vice president; Edward H. Kavanaugh treasurer and manager. This concern has admirably adapted sheds for the completion of large or small jobs. Their specialty is Westerly granite, and judging from the excellent work turned out at their plant the concern should soon be in the van of those who execute the best of the Rhode Island quarry product.

Following is the shipment of rough and finished granite by rail during the month of January: Quincy Adams, 2,246,890 pounds; West Quincy, 1,965,320 pounds; via Quarry Railroad, 123,500 pounds. Total, 4,335,710 pounds.

Later.

QUINCY, MASS., March 1.—A strike began to-day among the twelve hundred granite-cutters for a readjustment of hours and wages, which practically ties up the granite manufacturing industry of this city.

The Waterloo Granite Brick Co., of Waterloo, Ia., has been incorporated; capital stock, \$50,000.00.

The Alexandria Granite Works, Alexandria, Minn., has been organized with a capital stock of \$4,000.00. The officers are: William W. Sheldon, president; Gresham B. Ward, secretary and treasurer.

The Racine Granite Co., Racine, Wis., has just been incorporated with a capital stock of \$10,000.00. Those interested are: John Toft, Mary J. Toft, Marius C. Wadmond, Claude M. Christensen and Nicholas H. Gantenbein.

Mr. William Smith and others, of St. Cloud, Minn., will shortly establish a plant in that city for the manufacture of granite samples. Special machinery is being made by the St. Cloud Iron Works Co. for the purpose. The promoters are looking forward to a big business in this line and are making extensive preparations.

Monuments.

Monument Men Organize.

The Wisconsin Retail Marble and Granite Dealers' Association was organized at Milwaukee on February 24. The meeting was called by R. J. Haight and was held at the Republican House. After several days preliminary work the association was formed. The following officers were elected: Fred Schlingen, Madison, president; Carl Manthey, Green Bay, first vice president; W. F. Cook, Eau Claire, second vice president; Joseph Shaver, Milwaukee, third vice president; A. S. Jackson, Beloit, fourth vice president; S. A. Collins, Reedsburg, secretary; Henry Schule, Sheboygan, treasurer. The State will be divided into geographical districts in charge of vice presidents.

The next meeting will be held at Oshkosh in August. It is probable that the annual meeting will be held in Milwaukee.

A Successful Monument Company.

CLYDE, OHIO, February 17.—The Hughes Marble and Granite Co. to-day is another strong evidence of the result of thrift, industry and application to business. The manager, Mr. W. E. Hughes, started out twenty-one years ago on \$1,200.00 of borrowed capital. This was paid off in a few years, then the plant was gradually enlarged as the money was earned, and in 1889 the present company was organized, and it is probably to-day the largest strictly retail monument company in the United States. Mr. Hughes says that they will do no wholesale work, but that they will manufacture from the rough all they set up. He also stated that they had \$110,000.00 worth of work on hand at present.

They recently set up a \$57,000.00 job at Vicksburg, Tenn. The officers of the company are: W. E. Hughes, president; F. P. Dewey, vice president; Homer Metzgar, secretary; Fred Curtis, treasurer; L. M. Jenkins, assistant treasurer; J. B. King and J. B. Vogt, directors.

Handling Monuments Thirty Years.

SHELDON, IOWA, February 24.—Kemper & Cole write us: "We are handling marble and granite monuments just the same as G. W. C. Kemper has done for the last thirty years. Business is very quiet in this part of the country but we hope it will pick up soon."

Change in Monumental Firm.

AMERICUS, GA., January 30.—C. J. Clark writes us: "The firm of Miller & Clark was dissolved by mutual consent, December 31. Mr. Miller retiring. I succeeding the business. I came to Americus six years ago from Murfreesboro, Tenn., having formerly been the junior member of the firm of Nugent & Clark, at that place. I have some large contracts on hand, and have recently built a very commodious shop on the Seaboard Line tracks in the best business center of the city. The building is 100 feet long by 50 feet front, and equipped with all the latest improved machinery, and best skilled workmen. I have all the conveniences that can be had to reduce the expenses of manufacturing. The prospects for a good business are very flattering and I expect to increase the output to a considerable extent. The old firm of Miller & Clark has averaged from \$45,000.00 to \$50,000.00 per year. Am very much pleased with your paper, and think it is growing better from month to month."

A Wise Suggestion.

WALKERSVILLE, MD., February 3.—J. W. Stimmel writes us: "I want to make a Christmas gift to a friend of mine. He is a marble and granite cutter, and I think it will interest him and possibly be a profit to him, to have Rock Products. Send the January number if you have it, also paper for one year. We are frozen up here, but the outlook for spring is good."

Makes Notable Improvements.

LINCOLN, ILL., February 18.—The Lincoln Monument Co., which recently moved into its new plant, has installed a complete compressed air plant, which was put in operation for the first time a few days ago. It consists of a 5 h. p. electric motor of the General Electric Co.'s make, a Curtis air compressor and two tanks. This company has built up a nice business in a few years and the outlook for the present year is very bright. They contemplate doing considerable more work with the assistance of their new equipment.

In Memory of General Slocum Victims.

BROOKLYN, N. Y., February 23.—A granite monument costing nearly \$10,000.00 is being erected in the Lutheran cemetery here over the unidentified dead who were buried last June, victims of the General Slocum disaster. A large bronze plate in the center will bear an inscription to the effect that the monument was erected by the organization of the General Slocum Survivors and the general public. Two large statues, representing Faith and Hope, will ornament the monument.

A monument is to be erected on the burial ground of the Confederate soldiers, at Nashville, Tenn. It will cost \$1,500.00. Funds are now being raised. Dr. W. J. McMurray and others are interested.



RECENTLY CUT BY SWEENEY BROS., MONTPELIER, VT.
SET UP AT SHEFFIELD, PA.

The James F. Stewart Monument Association, of Paterson, N. J., will soon complete arrangements for the erection of a monument to cost \$10,000.00.

The People's Monument Co., of Cincinnati, Ohio, has been incorporated with a capital stock of \$10,000.00. The incorporators are: William T. Moylan, George A. Vance, Scott Meier, M. E. Davis and L. Robinson.

The City of Berlin has made an offer of three prizes for the best plans for a monument to be erected to the memory of the late Prof. Virchow. It is to be erected at the intersection of Karl and Luisen Streets, a square which will henceforth be known as Virchow Platz.

The government has appropriated \$35,000.00 for the erection of a monument to the memory of Oliver P. Morton, late Governor of Indiana.

A soldiers' monument is to be erected by the Ladies' Union Veteran Monument Association, of Douglas County, Neb. The monument is to be erected in Forest Lawn Cemetery, Omaha, Neb. It will cost about \$1,800.00.

The Pilgrim Memorial Association, of Cape Cod, Mass., will erect a monument costing \$50,000.00, at Provincetown, Mass. It will be in commemoration of the landing of the Pilgrims.

Marble

Revival of Ancient Marble Quarries.

Among other rare specimens of marble from the ancient quarries of Greece, the Aegean Archipelago, Asia Minor and Egypt, a consignment has recently been received in New York from Turkey. This is white statuary marble, and is known as the famous Synnadian marble, which has been widely known and used for generations in Rome for the decorative features of temples and public buildings. The variety of this marble is generally white with red spots, though some qualities of the Synnadian marbles have various colors. The quarries are between Synnada and Docimaeum, near the modern town of Bulwudun.

Owing to the lack of transportation facilities these quarries, while not forgotten, have been neglected for years. The Smyrna railroad, it is now believed, will make it possible to ship the product to this country, and an effort will be made to open and work the quarries.

The demand for unique decorative material, so much in use in many of our modern buildings, has stimulated a vigorous search for rare marbles, and other ancient quarries are now being made the scene of renewed activities, and some of their products are being continually received here.

Big Shipment of Alaska Marble.

SEATTLE, WASH., February 20.—The steamer Al-Ki has just arrived with fifteen tons of Alaska marble. This is the first large shipment of this marble to arrive at this port, which came from the El Captain quarry. The marble men here are very much elated over its arrival as they feel confident that they will soon be able to compete with Eastern firms in securing orders, as the rates on Alaska marble to this city by boat are quite low compared to the railroad rate. It is very probable that a new company will be organized for the purpose of handling same.

New Marble Mill Completed.

RUTLAND, VT., February 15.—The Vermont Marble Co. has just completed its new mill here, to replace the so-called Clement mill which was burned on December 5, 1903. The framework is of steel sheathed with corrugated sheet steel. The main mill is nearly 300 feet long and 75 feet in width and contains 28 gangs for sawing marble, of which 20 are block gangs and the remainder are piece gangs. At the west end of the mill is located the power house and engine and boiler rooms, which will add at least 50 feet more to the length of the structure. The main shaft is over 300 feet in length and extends the entire length of the mill. The old mill employed 55 men and under the modern conveniences now installed the same amount of work is being accomplished by 26 men. In just one year from the date of the burning of the old mill the first gang of the new mill was set in operation. Since then the other gangs have set in motion until now the mill is running on full time.

The Humboldt Marble Works, of Nashville, Tenn., has been organized with a capital stock of \$100,000.00.

The United States Marble Mill, at Knoxville, Tenn., was destroyed by fire on February 14. The plant is the property of John M. Muelier, of Cincinnati, Ohio, and the loss was about \$15,000.00, fully covered by insurance.

The Crookston Marble Works, of Crookston, Minn., has been incorporated with a capital stock of \$50,000.00. The incorporators are: H. E. Nesne, and O. C. Anderson, of Crookston and Charles N. Bourdon and M. Bourdon, of Red Lake Falls.

The National Marble Co., of Jersey City, N. J., has been organized. The capital stock is \$250,000.00. Andrew Lindsey, Rue Wiers and M. F. Gerhart are the incorporators. The company will deal in marble, granite and slate.

Lime.

The National Lime Manufacturers' Association.

Meets Semi-Annually.

Chas. Warner, Wilmington, Del. President
O. F. Perry, New York City First Vice President
W. B. Hill, Kansas City, Mo. Second Vice President
A. A. Stevens, Tyrone, Pa. Third Vice President
C. W. S. Cobb, St. Louis, Mo. Treasurer
E. H. Delebaugh, Louisville, Ky. Secretary

EXECUTIVE COMMITTEE:

Peter Martin, Huntington, Ind.; O. W. Robertson, Milwaukee, Wis., and the President.

Official Organ, ROCK PRODUCTS.

Valuation of Coal for Lime Burning Purposes.

With the increasing scarcity of our wood supply and the competition in the manufacture of lime, the factor of burning lime with coal has become an exceedingly important one, and too much attention can not be given to the selection and purchase of the most suitable and economical coal for burning lime.

This judicious selection and purchase of coal is helped to quite a degree by chemical analysis of the coal and it is for the purpose of showing wherein different grades of coal vary and what qualities are most essential for the production of lime, that this article is written.

The two grades of coal most commonly used for burning lime are Run of Mine, and Gas Slake Coal. The former, as its name indicates, being a run of the mine, and contains fine and coarse coal, varying in size from ordinary slake to lumps as large as musk melons—the latter, or gas slake coal, is quite uniform in size as it has been screened, hence all lumps are removed.

Run of Mine coal is a slightly better grade of fuel than Gas Slake for most manufacturing purposes, as it contains less fine coal, which as a rule, holds some of the culm or dirt of the mine, and hence its percentage is lower with a larger amount of fixed carbon, which element denotes the true calorific value of a coal. A good grade and therefore carefully prepared Gas Slake coal, however, has some advantages over Run of Mine coal in the manufacture of lime; and taking its first cost into consideration, which is 30 to 50 cents per ton less than Run of Mine coal, it may prove more profitable to use Gas Slake coal in burning lime.

In making analyses of coal it is generally sufficient, for practical purposes, to determine its moisture, volatile combustible matter (or gases given off at a certain temperature) fixed carbon, and ash. This is what is known as a Proximate Analysis and furnishes a very rapid and comparatively simple method of classifying and valuing coal.

The following analyses of several different grades of coal, with explanatory notes upon their composition, will show clearly what constituents are of value in lime burning.

The analyses of Georges' Creek and Pennsylvania anthracite are given merely to show more plainly the difference between bituminous, semi-bituminous and anthracite—the latter grade being useless for lime burning purposes, owing to its lack of volatile matter, hence furnishing but a short, cutting flame of intense calorific power.

Gas Slake Coal.

	Pennsylvania Slake	Westmoreland Slake	Fairmont Slake
Per ct.	Per ct.	Per ct.	Per ct.
Moisture	1.59	1.41	1.29
V. C. M.	34.81	35.69	38.71
F. Carbon	54.95	53.88	51.33
Ash	8.61	9.02	8.66
Sulphur	below 1.00	below 1.00	1.12

Run of Mine Coal.

	New Century R. O. M. Pocahontas Vein	Run of Mine Used by Western Lime Co.
Per ct.	Per ct.	Per ct.
Moisture	.67	2.43
V. C. M.	39.91	37.53
F. Carbon	55.05	53.80
Ash	4.37	6.24
Sulphur	.58	.74

	George's Creek Steam	Pennsylvania Anthracite
Per ct.	Per ct.	Per ct.
Moisture	.95	
V. C. M.	19.13	5.05
F. Carbon	72.70	92.07
Ash	6.40	(white) 2.90
Sulphur	.78	

¹Volatile combustible matter.

²Fixed Carbon.

³Included in above.

In looking over the above analyses of coal the main difference between the Gas Slake and Run of Mine grades of fuel is noticed in the percentage of ash—the volatile matter, which is a very important constituent of coal when used for burning lime, is practically equal in both these grades of coal and should be present within the limits of 34 to 39 per cent. for best results, as we rely upon the volatile matter, or gas contents of a coal to furnish the long, percolating flame, without which lime rock can not be burned.

The quantity and ingredients of the ash are important factors in the first place, because the ash is the inert and thermally useless constituent of a coal, and the variation in the quantity and constituents of an ash forms a very good criterion for determining the coals' efficiency and worth; for if it be required to compare successive consignments of the same coal or of similar coals the quantity of ash forms the simplest basis of comparison. Although the quantity of ash is small the less by this ash is larger than at first sight appears. Take, for instance, the familiar case of a steam boiler; the rate of combustion per unit of grate area and rate of steam raising are determined by the amount of air penetrating to the coal through the interstices beneath it. This quantity diminishes as the ash accumulates on the grate—hence if the coal contain much ash the difficulty of keeping up steam pressure is increased, not only by the interstices or openings between the particles of coal being clogged by ash, but also by the excessive time taken in removing clinkers formed, which of necessity involves admission of quantities of cold air. Heat losses are even more volatile in a lime kiln, where high temperature is very essential, as the ash accumulates the rate of combustion diminishes, and the temperature rises more slowly, until the bed of ash and clinkers become so thick that a general removal becomes necessary. This involves much unnecessary work and lowering of temperature in the kiln, followed by firing for what may prove to be a considerable time simply to make up lost ground. Thus in a gas producer the gradual accumulation of ash is exceedingly detrimental to its working, as in ordinary types and output of gas is stopped completely during the period of ash removal.

The Fusibility of Ash.

The preceding remarks would be incomplete without a word concerning the fusibility of ash, which is caused by the presence of iron pyrites in the coal, which in the process of combustion loses most of its sulphur as an inert gas; the iron remaining behind to help fuse the ash particles together, often times inclosing unburned carbon by melting of surrounding ash into large clinkers, and consequent stoppage of further combustion. This matter becomes of fundamental importance in the working of inaccessible fires such as those of modern blast-blown gas-producers with water seal and it behooves all users of such furnaces to see to it that their coal is free from fusible, clinker forming elements, such as iron pyrites, which compound not only denotes later formation of clinkers, but upon heating gives off sulphur, a thermally useless gas.

This chemical combination of iron and sulphur, known as iron pyrites is exceedingly harmful to coal when found amounting to 2 per cent. or over. As it was stated above, its products of combustion are not only inert but harmful and its clinker forming properties will injuriously effect any grate causing it to burn out quickly.

Lime Burning in Rotary Kilns.

STEWARTSVILLE, N. J., February 11.—A. H. Bigelow sends us the following: "I wish to add a few more remarks to my previous ones on the question of burning lime in rotary kilns. It seems strange to me that some progressive lime company has not taken the matter up; my experience in that line has satisfied me that it is the way to make lime of a high grade at a low cost. The present cost of burning a ton of Portland cement is 60 cents. In burning cement it is necessary to produce a heat that will fuse the material so that the lime and silica will thoroughly combine, the material being brought nearly to the melting point. In burning lime it is simply necessary to have enough heat to drive off carbonic acid gas, not over 50 per cent. of what is needed in burning Portland cement. I am satisfied that a complete rotary lime plant could be erected for a sum not to exceed \$20,000.00, and that said plant would produce not less than 150 tons per day of 24 hours, at a cost not to exceed 25 cents per ton for the burning. The resultant product would be a granulated lime, every particle of which would be thoroughly burned, and would slack quickly and evenly. I understand there is a great demand for that grade of lime and that it brings a considerable higher price than ordinary lump lime. A rotary kiln for Portland cement has to be refined every few months for a portion of its length, but one for lime, owing to the low heat needed, would not need any new lining for years. The method of lining a cement kiln would not produce satisfactory results in one burning lime; it would have to be differently constructed in order to make a perfect burn. That is a fact I learned during my experiments. While the lime men will look upon it as a risk I do not, but on the contrary, consider it an easy problem."

The American Lime Co., of Spring City, Tenn., has been reorganized and operations have been resumed. J. L. Milliron, of West Virginia, has purchased the interests of E. C. Angel. Mr. Milliron and Ewing Bros. will continue the business.

The Pearl Lime and Coal Co. has been organized at Denver, Col. The capital stock is \$15,000.00, and the incorporators are: George W. Mayhew, Harrison W. Wellman and Anders A. Gustafson, all of Denver.

The Anniston Lime and Stone Co., of Anniston, Ala., has been incorporated with a capital stock of \$200,000.00, divided into 2,000 shares at \$100.00 each. The greater part of the stock has been subscribed for. J. W. Comer, R. H. Cobb and W. P. Acker are the directors. The company will own and operate lime quarries, lime furnaces and manufacture lime and fluxing stone; also buy and sell lime.

Plans are being consummated for the organization of a company at Austin, Tex., for the purchase and development of the Taylor lime kiln, near Mount Bonnell. The tract comprises about 500 acres of the best limestone in that part of the country. Wealthy Austin men are back of it.

On January 16, the property of the Benton County White Lime Association, at Bentonville, Ark., was bought at public sale by P. C. Barton, of the Barton Lumber Co., of Jonesboro, Ark. The new owner will start the plant at once.

The Metropolitan Lime Co., of Brooklyn, N. Y., is the name of a new company just incorporated with a capital stock of \$10,000.00. The directors are: Edward Youngwitz, D. R. McDonald and M. V. McDonald, of Brooklyn.

The Harpers Ferry Lime Co. was organized on January 23, for \$250,000.00 on development, equipment and operation of extensive dolomite limestone quarry crusher hydrated lime burning plant to be located at Millville, Jefferson County, W. Va. Mr. John P. Martin is the moving spirit. His present address is 41 Q Street N. W., Washington, D. C.

Two Sides to the Case.

The Eldred Process Co., of New York, has requested us to state that there is a misapprehension regarding its suit against the Washington Building Lime Co. Certain publications have stated that the Eldred Co. had lost its case. There are two sides to this question, and we will publish a fuller account of these in an early issue.

REGULAR ANNUAL MEETING.

The National Lime Manufacturers' Association Meets in New York.

STEADILY ADVANCING THE INTERESTS OF THE INDUSTRY.

The National Lime Manufacturers' Association met in New York City at the Hotel Astor, on the morning of February 14, at 10 a. m., and at roll call the following concerns and firms were found to be represented:

THE ATTENDANCE.

A. L. Barnes, A. & M. Barnes Lime Co., Sheffield, Massachusetts.
 A. L. Beck, Mitchell Lime Co., Huntingdon, Ind.
 Mr. Brown and Mr. Robertson, Wisconsin Lime and Cement Co., Milwaukee, Wis.
 Byron Eldred, Colorado Lime Co., Colorado Springs, Colo.
 S. E. Brainerd, The Edwin Bell Co., Pittsburg, Pa.
 Wallace Canfield, C. E. Griffing, New England Lime Co., Canaan, Conn.
 C. J. Curtin, Farnam Cheshire Lime Co., New York City.
 L. A. Christie, Wm. B. Ruggles, Ruggles-Coles Engineering Co., New York City.
 C. W. S. Cobb, Glencoe Lime and Cement Co., St. Louis, Mo.
 Thos. D. Cone, National New Process Lime Co., New York City.
 Wm. E. Carson, Riverton Lime Co., Riverton, Va.
 Phil Daurenheim, Goetz Lime and Cement Co., St. Louis, Mo.
 E. H. Defebaugh, Rock Products, Louisville, Ky.
 Wm. Irvine, Knickerbocker Lime Co., Philadelphia, Pennsylvania.
 Albert S. Farnam, Farnam Cheshire Lime Co., Cheshire, Mass.
 T. E. Fleischer, Sheboygan Lime Works, Sheboygan, Wis.
 Frank J. Fulton, Kentucky Stave Co., Louisville, Kentucky.
 A. D. Grove, O. J. Grove Lime Co., Lime Kiln, Md.
 Mr. W. L. Helsey, High C. Lime and Stone Co., Rheims, Pa.
 F. P. Hunkins and J. C. Beeler, Hunkins-Willis Lime and Cement Co., St. Louis, Mo.
 Luther Keller, Scranton, Pa.
 C. C. Krietzer, Clyde Iron Works, Duluth, Minn.
 Mr. Lee, Lee Lime Co., Lee, Mass.
 F. C. Lauer, Rochester Lime Co., Rochester, N. Y.
 C. M. Lauritzen, Raymond Bros., Impact Pulverizer Co., Chicago, Ill.
 D. F. Perry, Rockland-Rockport Lime Co., New York City.
 R. H. Purcell, Eastern Lime Co., Easton, Pa.
 Joseph Reaney, Jr., Scioto Lime and Stone Co., Delaware, Ohio.
 A. A. Stevens, J. King McLanahan, American Stone and Lime Co., Tyrone, Pa.
 Mr. Chas. Warner, — Warner, Mr. Gotthrup, Chas. Warner Co., Wilmington, Del.
 Theo. S. Wright and Theo. S. Wright, Jr., Lime-rock, R. I.
 J. B. Vandever, Chas. Warner Co., Wilmington, Delaware.
 S. S. Walton, Steacy & Co., Wrightsville, Pa.

C. C. Weiler, Wisconsin Lime and Cement Co., Milwaukee, Wis.
 A. E. White and Walter Sheldon, New Jersey Lime Co., Hamburg, N. J.
 T. S. Wright, Lime Rock, R. I.

OPENING SESSION.

President Warner called the meeting to order, after which the secretary read the minutes of the last annual meeting.

The president then made his annual address as follows:

PRESIDENT'S ADDRESS.

Gentlemen:—It is a pleasure to see you all once more. Our one regret is that so many members have been prevented from coming by sickness and



CHARLES WARNER, WILMINGTON, DEL.

death, as indicated by over a score of letters received during the last few days. But for this fact our New York meeting would have had an attendance far exceeding that of any other meeting.

We have come further East for this year's meeting, with the object of interesting as many of the Eastern Manufacturers as possible in this association. To this end our officers have addressed themselves particularly during the past few months to all Eastern manufacturers. Owing to limited funds at our command this work had to be done largely by correspondence with poor results.

Nearly a year ago your officers, after studying the conditions confronting the association, issued a detailed letter to every member, feeling that the work was of enough importance to go into it exhaustively. Frankly speaking, this letter received little attention and the result was quite dispiriting. Several of these subjects pertaining to the association work were also suggested at the subsequent and last semi-annual meeting with no discussion resulting. Now, gentlemen, we are very evidently to the point in our association life when definite steps must be taken or we will go backwards. We are confronted with the condition that there are many things to be done, but a few hundred dollars per year will not do them. The number of lime manufacturers is naturally limited and at the best will be but a small fraction of the membership that other associations gain, hence our funds must be obtained by larger payments from each member.

Association work has been found very profitable in other lines of work, and each year finds a larger amount of funds being devoted to supply the fuel to make the wheels go around.

Considering the lime manufacturers as a whole, I am fearful that a majority of them spend all their time on the ordinary duties that come up from day to day without consideration to the general conditions which keep up manufacturing costs, keep down the selling prices, limit consumption, etc. They fail to realize that in intelligent association work, they have the method of to-day and of the future for largely curing their ills. Instead, they complacently settle by their own firesides and await the ravages of business ills, to finally leave them without property, health and accumulated funds.

It might be useful to make a few figures on profits from an association where every man is putting his shoulder to the wheel and going down into his pocket for his proportion of the expense.

Our association members represent a lime manufacturing output of considerably over 30,000,000 bushels of lime per year.

We have three general lines of development:

- 1st.—Plant Economies.
- 2nd.—Higher Selling Prices.
- 3rd.—Increased Lime Consumption.

Under the first heading I can mention several plants which have improved their cost of manufacturing from one cent to three cents per bushel during the past few years and each of these plants still have possibilities of further economies. I should say that a few years of systematic effort at all plants of association members would easily result in an average improvement of a half cent per bushel. This amounts to \$150,000.00 annually to association members.

Under the second heading several companies are already making large profits on their lime, due to local association work. The increase over former cut-throat prices ranges from 2c to 9c per bushel. If we could only increase the average by $\frac{1}{2}$ c we have added another \$150,000.00 to our estimate.

To comprehensively cover the work it is certainly necessary to have a National Association to educate many districts and to then adjust points of dispute where districts overlap, etc.

On the question of increasing the use of lime I can only estimate from many sources of information it is judged that new uses should be developed that will increase at least five per cent. of lime use on which an average profit of five cents per bushel should be made. This amounts to \$75,000.00 to our members, or altogether, about \$375,000.00.

I believe that an annual expenditure of \$12,000.00 to \$15,000.00 per year would go a long way toward accomplishing the above result if kept at for two to four years.

What man among you would not spend \$15,000.00 a year to make at least \$100,000.00?

I have merely given you the rough estimate to show you why I advocate pushing this association with new funds.

The time allotted to man on this earth is short, and if we are to accomplish anything of moment, we must push every department of our business and association work is certainly an important part.

Announcements were made for the work of the meeting and suggestions were offered for an executive committee to be appointed to work in conjunction with the president.

A letter was read from Mr. Peter Martin, of Huntington, Ind., regretting his absence and sending a paper on "Organization," which was read as follows:

ORGANIZATIONS.

BY PETER MARTIN, HUNTINGTON, IND.

This is an age of organizations. All over the land, forces are coming together, industries are uniting and consolidating, the methods of business are simplified, and combination seems to be in the order of the day. Yet, with all this seeming activity, the matter of organization, so far as it concerns business relations has made but little progress.

Organization in lines other than business is no new idea. The idea was first promulgated at the creation of man when the decision was made that "It is not good that man should be alone." Here was the germ of organization, the establishment of the family. After the family came the tribe, then the union of tribes into the community, and finally the state and nation, until we find fully developed the idea of organization in government. In business matters, however, organization has been of very slow growth. The policy has been of everyone for himself, thus losing sight of better methods and aims through the blindness of selfishness.

But the time has now come when organization in all lines of business and manufacturing is necessary in order that the best results may be attained. The output of manufacturers seems to be greater than the demand and I believe that thorough organization of all the forces under our command will discover a remedy for this seeming discrepancy. I say seeming, for I believe that some of the results of organization will be to discover methods of increasing the demand.

The advantages of organizations may be classed under three heads: Social, Educational and Financial. When dealers or manufacturers in a certain line become organized and have their meetings, a social influence is exerted which is productive of a vast amount of good. We find that to be a competitor does not necessarily imply that a person is an enemy, but by coming together we realize the good qualities of persons in the same line of business and thus form a basis for strong friendships that otherwise would not be made.

The second advantage of organization, the Educational, is one not to be overlooked. In a well conducted and carefully planned organization of dealers and manufacturers, there will be an interchange of ideas and methods that will have a tendency to broaden the knowledge of the individual, enlarge his thoughts, and lead him to study more thoroughly the principles that underlie his business. No one man is conversant with all the points and ramifications of his profession, or calling, and by this interchange of ideas a great educational work is accomplished by organization.

But, perhaps, more interest will be manifested in the third advantage of organization than in the other two. It has been said that competition is the life of trade, but I would revise the maxim to read, that organization is the life of trade. A nation or country may have natural resources in great abundance, its citizens, individually may be brave and patriotic, but unless an organization is effected to utilize the resources and to employ the citizens in its defense it is weak and an easy prey for others. There may be a large number of men that hold certain political views or ideas concerning the administration of governmental affairs, but their ideas can only be made effective by some sort of political party organization. So it is with the dealer or manufacturer. We are all working to better our financial condition and this can only be effectively done by thorough and complete organization.

By organization the dealers and manufacturers are enabled to so regulate the business of production as to eliminate all uncertainty in the disposition of the products. The field in which the products are distributed is more carefully studied. The demand is better regulated and there is no necessity of lessening the output because more intelligent methods are used in equalizing the great laws of supply and demand. By a complete and thorough organization, one manufacturer will not be overproducing or else allowing his plant to remain idle for want of a market while another works his plant over-time and is then unable to fill all his orders. Neither of these conditions is the ideal of good business methods.

An effective organization has a knowledge of the needs of the entire country and then can arrange the distribution of the product in a systematic and profitable manner. In this manner both

the producer and the consumer are benefited and the business world profits by the transaction.

Organization in business lines should not be a method adopted for but a few persons. It should be the policy of all. Not only the large producer but also one of limited facilities and means is benefited by organization. The theory and principle of organization must be based upon right. The Government is now engaged in the solution of a problem, that of interstate commerce, having for its object a just and equitable rate for shipping. It is none the less needful that a just and equitable system of sales and profits become an established principle among dealers and manufacturers. Organization on broad and intelligent lines is the only method of attaining so desirable an end.

There are several things to be considered in forming an effective and working organization. One of the main points to be considered and remembered is that the life of an organization depends upon the straight-forwardness of its members. There must not be the slightest attempt of one member or a number of members to exploit themselves or to take an advantage of another, but all must work in harmony for the general good. The principle that is advocated by some of the trade unions that "an injury to one member is the concern of all" is a good one for an organization.



PETER MARTIN, HUNTINGTON, IND.

ization of dealers and manufacturers. This may sound like the adoption of the "Golden Rule," but it is also the outgrowth of the maxim, "Honesty is the best policy." Neither should there be lack of this straightforward idea among the officers of an organization. They should be men whose character and reputation and square and right dealing is unquestioned. There can be no state or governmental law defining the relations between the members of an organization, and hence it is only by a strict observance of the principles of right and justice on the part of members and officers that an organization accomplishes the desired results.

Another point I think deserves consideration relates to the compensation of the officials. An organization should not be over-burdened with officers, nor should the salaries be placed at a high figure. As an organization is for the benefit of all and not alone for a few, the profits should go to the stockholders and the salary list should be kept at as low a figure as possible. All unnecessary expenses should be strictly eliminated. A large number of officials, high salaries, and heavy expenses are elements that will wreck any organization, however carefully it may have been planned and however worthy its object. The general good of all and special favors to none should be the motto for an organization that is to accomplish the results desired by its existence.

In these few remarks I have endeavored to express some thoughts upon a subject that is, or

should be, of interest to all present. I believe that organization in all lines of business is not only desirable but that it is becoming absolutely necessary, and the business life of manufacturers and dealers depends upon it. We can no longer hold ourselves apart; business conditions will not permit it. In order that we may conduct our enterprises in a safe and profitable manner we must unite, come together, and take counsel of each other. This is the only way that we can solve the problems that confront us in the business world.

Mr. Stevens made remarks on the theory of organization and told of conditions that were not satisfactory within the territory of the association.

This was answered by Mr. Beck, and remarks were made by others along this line.

Mr. Fleischer suggested re-districting the manufacturers in territories and suggested that the vice president look after same.

Mr. Robertson spoke of the possibilities of organization and favored the suggestions made by the president.

Mr. Sheldon was of the same opinion.

After discussing the possibilities of what can be done along the line of organization, and on motion of Mr. Fleischer a committee of three was appointed to devise ways and means to employ a secretary, to report tomorrow.

Mr. W. B. Ruggles then read a paper.

Mr. Ruggles' paper will appear in the pamphlet issued for members only.

Chairman Warner selected a Committee on Organization as follows: T. E. Fleischer, Wm. Irvine and C. W. S. Cobb.

The treasurer's report was then called for and read by the treasurer who had just arrived on the scene.

This report was approved by the Auditing Committee, composed of Luther Keller and O. F. Perry. The meeting then adjourned.

WEDNESDAY MORNING SESSION.

The Committee on Ways and Means suggested that the dues be raised to \$25.00 per year and that the organization employ a regular paid secretary. They also recommended that an Arbitration Committee be appointed by the president, composed of two men, and that an executive committee of three, of which the president should be one member, be appointed to select a secretary.

After some discussion, on motion of Mr. A. A. Stevens this report was accepted.

Discussing the matter of raising the dues Mr. Lauer said: "What will we do with \$25.00 when we get it? I believe we should have a man to work out the plans of the association, and I do not object to paying this money, but I want to feel that we are getting our money's worth."

Mr. Irvine suggested that a live man as secretary would increase the membership.

Mr. Keller suggested that manufacturers in local sections should be organized, and after a general discussion, bringing out the needs for greater effort and some one to give all his time to the association, it was passed by unanimous roll call.

Mr. Stevens suggested that he thought the executive committee should be selected by the officers, and on motion of Mr. Keller and seconded by Mr. Stevens, it was moved that the constitution and by-laws be amended increasing the officers by two members of the executive committee, who, with the president, would form such a committee, the remaining two members to be elected.

On motion of Mr. Lauer the amendment or changes in the constitution and by-laws was adopted.

There was a long discussion on wages and general information of value to members only, which, on motion of Mr. Stevens, the secretary was authorized to furnish to the membership only, and not for publication in any way.

This was seconded by Mr. Keller and passed unanimously.

The recommendation was made that at the next meeting the executive committee appoint a man to get up a paper on "Piece Work in Quarry Operation as Applied to Making Lime."

On motion of Mr. Fleischer, a Committee on Nomination, composed of three members, was ap-

pointed by the president to nominate officers for the ensuing year.

The next thing on the program was a paper on "Tests and Uses of Lime and Hydrated Lime," by E. W. Lazell, of Hy. S. Spackman Engineering Co., Philadelphia, Pa., which was appreciated by every one present.

[This paper was so good it was for the exclusive use of members only, and will be shortly sent out to members in pamphlet form.—*Editor*.]

On motion of Mr. Stevens the thanks of the association was extended to Mr. Lazell for his efforts and for this valuable paper. In making this motion Mr. Stevens made the remark that it was the finest thing that has ever been given to the lime trade.

This motion was seconded and thanks passed around by acclamation.

Mr. Keller then suggested that the paper be furnished in pamphlet form for members. This was referred to the publication committee and announcement was made of the trip to The Charles Warner Co.'s plant at Cedar Hollow, on Thursday at 9 a. m.

The Auditing Committee reported the treasury in good condition.

ELECTION OF OFFICERS.

The Nomination Committee reported the following officers for the year: Charles Warner, Wilmington, Del., president; O. F. Perry, New York City, first vice president; W. B. Hill, Kansas City, Mo., second vice president; A. A. Stevens, Tyrone, Pa., third vice president; C. W. S. Cobb, St. Louis, Mo., treasurer; E. H. Defebaugh, Louisville, Ky., secretary.

The executive committee is composed of Peter Martin, Huntington, Ind.; O. W. Robertson, Milwaukee, Wis.

Mr. Sheldon suggested that the thanks of the association be extended to the officers for the excellent work done last year, especially referring to the president.

Mr. Weller spoke in the same vein, lauding the efforts of the president to make this a good association.

On motion the secretary cast the vote of the association for the board of directors, who were elected as follows: A. Newton, Chicago, Ill.; J. C. Paxton, Toms Brook, Va.; R. H. Cobb, Anniston, Ala.; W. S. Sutliff, Fostoria, Ohio; George B. Christian, Marion, Ohio; R. C. Brown, Oshkosh, Wis.; F. C. Lauer, Rochester, N. Y.; Lawson Moore, Cincinnati, Ohio; F. P. Hunkins, St. Louis, Mo.; Homer Sly, Bay Shore, Mich.; John P. Rich, Swanton Junction, Vt.; F. O. Gulley, Fayetteville, Ark.; A. Courchesne, El Paso, Tex.; Wallace Canfield, Canaan, Conn.; Walter Sheldon, Hamburg, N. J.

The meeting then adjourned.



W. B. HILL, KANSAS CITY, MO.

THE ANNUAL DINNER.

The annual dinner of the association was held in the Hotel Astor. The following menu was served:

MENU.

Buffet Russe
Huitres Sur Coquille
Consomme de Volaille aux Quenelles
Olives Celeri Radis Amandes Salees
Kingfish a la Meuniere
Concombres Pommes de Terre Chateau
Selle de Mouton Canadien, Portugaise
Haricots Verts
Ris. de Veau Piques Glaces aux Champignons Frais
Sorbet Benedictine
Perdreau Importe Roti Sur Canape
Salade Escarole
Pouding Nesselrode
Petits Fours Fruits Assortis
Fromage
Cafe Noir.

Addresses were made by a number of those present and it was the best thing ever gotten off, socially, in the lime trade, but this being a national organization, we hope it will be a regular feature of these meetings, and the sociability of the occasion, without any wine accompaniments, made it a particularly happy affair.

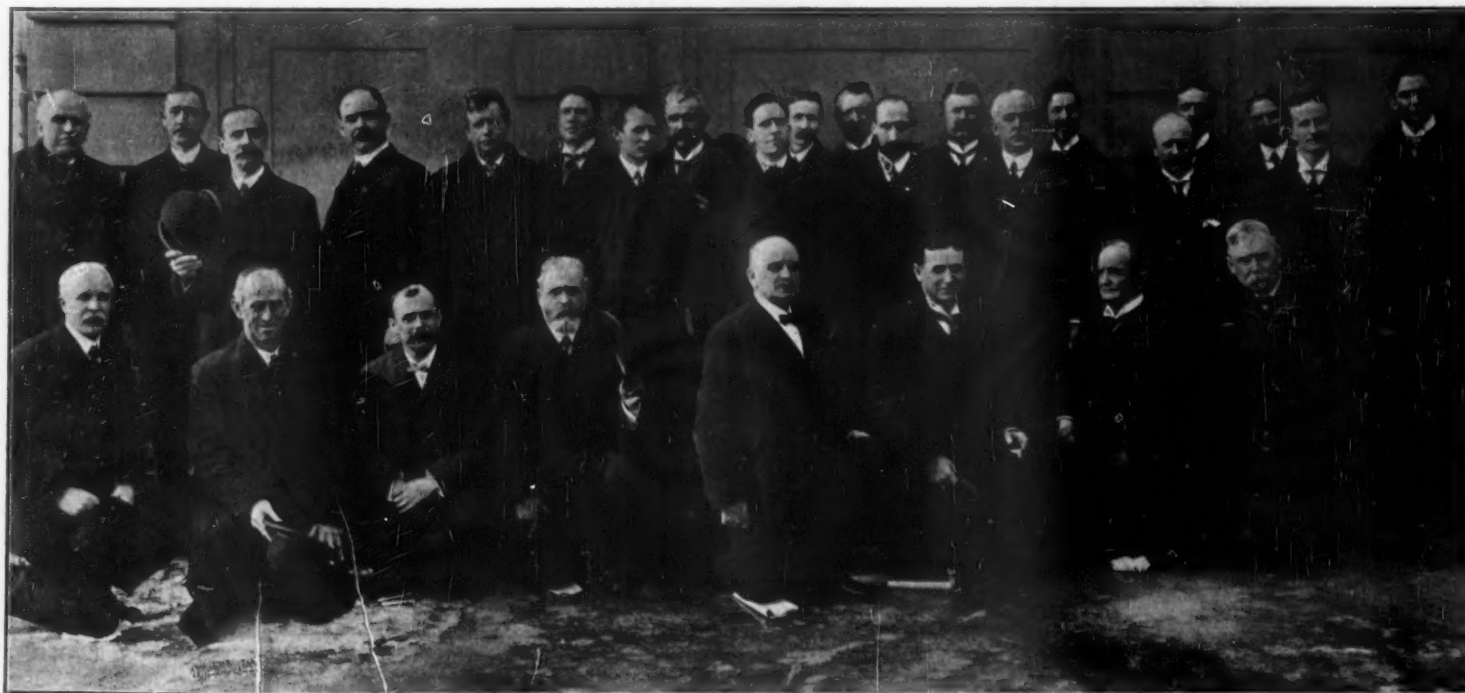
An Economical Gas Generator.

At Oakland, Cal., is an illuminating gas generator which produces 3,000,000 cubic feet of gas every twenty hours. This is believed to be the largest single unit generator in the world. Owing to the great abundance of oil, together with the growing scarcity of coal a change has been necessitated in the method of gas manufacture in this section. Only one coal gas plant now remains in California. As a consequence the price of gas has been considerably reduced.

We give the following description of the generator: There are two steel shells of a cylindrical shape, sixteen feet in diameter and twenty-eight feet in height, one being used as a generator, the other as a superheater. A flue box at the top is connected and so arranged as to permit the largest opening for the flow of gas possible. This oil gas generator differs from others from the fact that it contains no arches, the oil being treated by heat radiated from checker brick and the walls of the lining, and not by direct contact. There is an open combustion chamber at the bottom portion of the generator which is drawn in at the top in the manner of the dome of a cupola. The inside diameter of the generator is 11 feet 4 inches and the top of the combustion chamber is 6 feet. There is a shelf almost 3 feet wide encircling the generator, which is situated on the top of the corbel work, which forms the dome of the combustion chamber. Checker brick are laid on the shelf to a point reaching the bottom of the flue connecting the two shells. The superheat is filled with checker brick, which are laid in the ordinary manner, with vertical flues of large area.

Two thirty-three outlet pipes connect the generator to a wash box provided with a seal and acting as a hydraulic main. Through a scrubber twelve feet by thirty feet, and two scrubbers ten feet by thirty feet, from this box the gas passes. Not being as sensitive as coal gas, which requires fresh water, sea water is used for washing the gas.

One hundred and fifty thousand cubic feet of gas per hour is the record of this machine which can be operated by one man. All that he is required to do is to open and close a valve.



THE LIME MANUFACTURERS' CONVENTION IN NEW YORK.

Cement.

The Manufacture of Russian Cement.

The manufacture of Portland cement in Russia, while comparatively new, has nevertheless made rapid strides in the past few years. This industry was practically unknown ten years ago in this vast country, at which time the annual output was not more than 300,000 barrels, equal to about 50,000 tons. This was mainly produced by one company and the sales were confined to a limited boundary.

Some time later other companies began operations and the demand for cement became very much improved. In 1898 eight new companies were organized in the Black Sea district and the demand steadily grew from 400,000 barrels in 1896 to 1,000,000 in 1899. This was further increased in 1901 to 1,500,000 barrels. Despite the ever increasing demand the production was greatly in excess of the consumption, however, and prices began to decline very rapidly. This state of affairs was fatal to a number of the older companies, some of which were compelled to close down their plants. In 1901 the production was almost half as much again as the demand, or production 2,950,000 barrels, consumption 1,550,000 barrels.

Purchases Big Cement Property.

DENVER, COL., February 15.—More than 5,000 acres of valuable land has recently been purchased by W. F. Kendrick, president of the Crescent Land and Cement Co. This property is near Deer Creek, and possesses much valuable cement material. In the near future he will build a cement plant, which will cost considerable. One deposit is estimated to contain at least 68,000,000 tons of cement material.

A Capacity of 7,000 Barrels Per Day.

ALLENTOWN, PA., February 17.—The Lehigh Portland Cement Co., write us: "Our mill 'G,' at Mitchell, Ind., for which plans are now being completed, and material ordered for same, will be started April 1, and completed by the end of the year. This mill, having a capacity of 5,000 barrels per day, and together with the 2,000 barrels now being manufactured at our mill 'C,' Mitchell, Ind., will give us 7,000 barrels per day from this locality."

The Green Island Cement Co., of Hong Kong, will build a new plant and will increase their capacity to a very large extent. The present output of the plant is 34,000 barrels per month. The improvements will cost about \$400,000.00. Most of the cement is shipped to the Philippines.

Imports of Portland, Roman and Other Hydraulic Cements.

MONTH OF DECEMBER, 1903			12 MONTHS ENDING DECEMBER, 1903	
COUNTRY	BBLS. 380	VALUE	BBLS. 380	VALUE
United Kingdom.....		\$.....	154,730	\$ 190,444 00
Belgium.....	7,019	7,892 00	776,396	893,327 00
France.....	3,230	5,183 00	15,648	25,051 00
Germany.....	49,114	70,429 00	1,449,910	1,863,637 00
Other Europe.....		00	28,858	30,575 00
British N. America.....		00	4,653	8,516 00
Other Countries.....		00	9,752	15,561 00
Totals.....	59,363	\$83,504 00	2,439, 947	\$3,027,111 00

EXPORTS.

December, 1903..... 17,173 barrels, value \$ 27,722 00
 Twelve months ending December, 1903..... 285,463 barrels, value 433,984 00

Imports of Portland, Roman and Other Hydraulic Cements.

MONTH OF DECEMBER, 1904			12 MONTHS ENDING DECEMBER, 1904	
COUNTRY	BBLS. 380	VALUE	BBLS. 380	VALUE
United Kingdom.....	355	\$ 532 00	17,227	\$ 22,794 00
Belgium.....	8,119	10,442 00	415,124	494,822 00
France.....	4,856	7,686 00	36,750	49,202 00
Germany.....	132,231	181,208 00	116,252	794,538 00
Other Europe.....	12	8 00	7,934	10,273 00
British N. America.....	14	336 00	610	1,516 00
Other Countries.....			7,465	9,899 00
Totals.....	145,587	\$200,212 00	1,101,362	\$1,383,044 00

EXPORTS.

December, 1904..... 105,931 barrels, value \$131,822 00
 Twelve months ending December, 1904..... 774,940 barrels, value 1,104,086 00

IMPORTS—Increase for December, 1904, on 1903, 86,224, \$116,708.00.

IMPORTS—Decrease for 12 months, 1904, on 1903, 1,338,585, \$1,644,067.00.

EXPORTS—Increase for December, 1904, on 1903, 88,758, \$104,100.00.

EXPORTS—Increase for 12 months, 1904, on 1903, 489,147, \$670,102.00.

A Reinforced Concrete Bridge.

Through the courtesy of our friend, Mr. L. W. Penfield, treasurer and manager of the American Clay Working Machinery Co., one of whose plants is located at Willoughby, Ohio, we have received the photograph and accompanying particulars of the concrete bridge over Chagrin River at Willoughby, Ohio, which was completed just at the close of the year 1904 by the Lake Shore and Michigan Southern railroad. The American Clay Working Machinery Co.'s plant is at the left hand of the picture with the walls of the factory beginning within ten feet of the lines of our illustration, and the corner of the manager's residence is shown in the upper right hand of the picture. This bridge is said to be the longest single span reinforced concrete arch that has ever been built,

and carries the four track main line of the railroad. The construction and completion of the bridge was entirely without interruption of the traffic at any period, the false work being removed some weeks after freezing weather commenced.

The entire length of the bridge is 180 feet. Length of the span at water line, 153 feet. Height of span from water line at crown of arch, 36 feet. Height of bridge from water line to top of side walls, 47 feet. Width of bridge 64 feet. The depth of excavation into shale rock at the Western end was 7 feet and at the east end 14 feet.

Materials used: 300 cars (9,000 tons) crushed limestone, 160 cars (4,800 tons) washed gravel, 52,000 sacks (2,470 tons) Portland cement, 310 tons corrugated steel bars. Sandusky, Omega and Wolverine Portland cements were used.



L. S. & M. S. REINFORCED CONCRETE BRIDGE, WILLOUGHBY, OHIO.

Product of Big Plant.

A very unique and attractive catalogue is being mailed to all parties interested in Portland cement, by the Marquette Portland Cement Co., Marquette Building, Chicago, Ill.

It is profusely illustrated with fine half tone pictures of their plant, and of different buildings in course of construction in which hollow building blocks are used; concrete buildings, concrete pavements, also instruction for the use of Portland cement, as well as its use and abuse.

The following will give some idea of the Marquette Portland cement. It is manufactured at La Salle, Ill. The raw materials are carefully selected and contain all the chemical ingredients essential to first-class Portland cement. After being ground to a fine flour the rock and clay mixture is passed into rotary kilns where it is burned at a heat of some three hundred degrees Fahrenheit. The material is then a hard brittle clinker, and when ground again becomes Portland cement.

Throughout the manufacture the chemists employed by the company, closely watch each process and the greatest care is used from the time the rock is quarried until the cement is conveyed to the storage bins. Tests are made continuously, and before any shipments are made a complete record is on file, of fineness, boiling and steam tests and breaking strength. Copies of these records can be had by a customer if desired.

The output of the Marquette Portland Cement Co.'s plants is 500,000 barrels annually. They have direct railroad connection with the Chicago, Burlington and Quincy railroad, Chicago, Rock Island and Pacific railroad, Illinois Central railroad, Chicago, Milwaukee and St. Paul railroad, and the Chicago and Northwestern railroad.

Power Company Lets Big Cement Contract.

ST. PAUL, MINN., February 21.—The Koochichien Power Co., which is about to develop the water power at International Falls, is making preparations to begin work early in the spring. The company has just closed a contract with the Alpena Portland Cement Co. for the cement to be used in the construction of the dam, the paper mill, pulp mill, sawmill, etc. The extent of the plant is shown by the amount of cement contracted for, 100,000 barrels, which will cost about \$150,000.00. This will amount to about 1,600 carloads, or twenty boat loads. This amount of cement is one-fifth of the total production of cement in the United States in 1891, though last year the total production amounted to 25,000,000 barrels. It is said to be the largest cement contract ever placed in the Northwest. The cement will be used for the dam and for the foundations and part of the walls of the mills. The work of construction is expected to occupy two years.

Cement Plant in the Northwest.

SEATTLE, WASH., February 23.—Dundas is the name of a new town just about to spring into existence. It is, or will be, situated on the main line of the Great Northern railroad in Skagit County. Arrangements are under way for the development of a cement mine which is expected to produce a fine quality of Portland cement. An organization has been formed with a capital stock of \$200,000.00 by local and New York capitalists. The new company will use 1,500 h. p. taken into turbines by a flume from Skagit River. The capacity of the plant will probably be 1,200 barrels per day. This is the only cement plant in Washington or Oregon.

The Louisiana Portland Cement Co., of New Orleans, La., a new organization, will erect a cement plant costing \$600,000.00. The daily capacity of the plant will be 1,800 barrels. C. F. Ritter, of Covington, Ky., and J. A. Cruikshank, of Bellefontaine, Ohio, are interested.

The American Keene Cement and Lime Co., of New York City, has been incorporated with a capital stock of \$350,000.00. Max Hermann, Seymour M. Hermann and Jos. J. Silver, of New York, are the directors.

Balfour, Guthrie & Co., will soon begin the erection of a cement plant at Billingham, Wash. The plant, it is said, will cost about \$1,000,000.00. The extensive lime deposits near Kendall, according to an expert, are very valuable.

The Atlas cement plant, at Northampton, Pa., will make some extensive improvements in their plant during the coming season. The business of this concern has very largely increased lately.

Artificial Stone

For Association Members Only.

Last December 5, the manufacturers of sand-lime products met to organize an association for the betterment of their products and their interests in general. It was the purpose of the association to select a secretary who would cheerfully be instrumental in circulating among the members papers prepared by experts on various phases of the business, and who would answer all questions within his knowledge that might be helpful to those starting in the industry. The initiation fee was fixed at five dollars and the annual dues at five dollars. There was a prompt and unusually large registration. The demands of the members are many, yet the secretary has not wearied in his efforts to be of use and to learn incidentally a great deal himself. But he finds his mail consists largely of requests for technical knowledge from plants already running whose managers have forgotten to inclose a two cent stamp in place of registration fee. This is a case of robbing Peter to pay Paul, for time is money in sand-lime brick business, and the secretary has been obliged to make it a rule to reply to members only.

Tests for Sand-Lime Brick.

Mr. H. O. Duerr, secretary of the National Association of Manufacturers of Sand-Lime Products, Wilmington, Del., has sent the following circular to all the members of the association with regard to the testing of materials and the cost of the same, together with general instructions as to manner of procedure, this offer being confined to members of the association exclusively:

As the making of tests means the employment of assistance on my part, as well as the incurring of considerable expense, I have determined that I would be glad to make such tests as any of the members may desire, at the following rates:

For crushing strength, per test.....	\$1.50
For tensile strength, per tests.....	1.50
For absorption, per test.....	1.00
For mechanical analysis of sand, per sample.....	2.00
For complete chemical analysis of sand, per sample.....	10.00
For complete chemical analysis of lime, per sample.....	15.00

For such tests as you desire to have made, it is necessary for you to send me one brick for each test, or as many more as you may desire to have tests made.

For Test of Sand: If you should desire that I should make a test of the amount of moisture in your sand as well as a mechanical test, you should take what you consider a fair sample of your sand as it comes from the bank or shore, and put it in a large-necked bottle, carefully sealed up. A Mason jar with a rubber washer would probably be the most satisfactory and convenient. The sample should be about two pounds in weight.

In the case of lime, several ounces will be sufficient.

In selecting your samples for analysis, it is well to take a little from the various points in your stock pile in order that a fair average may be obtained of what you have. Such samples as you desire to send for test should be carefully packed and shipped by mail or express prepaid. On receipt of same I will immediately make the tests which may take from one to two weeks, and report to you upon completion.

These tests and reports will all be treated confidentially, and will be considered your own private property.

The Corning Artificial Stone Co., will be organized at Corning, N. Y., in the near future. The buildings are about completed and the company will manufacture concrete blocks. Those composing the company are also members of the Corning Brick, Terra Cotta and Tile Works.

Expert Construction of Plants.

To the Editor of Rock Products:—We note in your February issue a very good article by Mr. H. O. Duerr, secretary of the National Association of Manufacturers of Sand-Lime Products, entitled, "Another difference of opinion."

This article, as well as the one to which it is a reply, deals with the question as to whether it is cheaper in the long run for a person intending to erect a sand-lime brick plant, who has no previous knowledge of the business, to purchase his entire outfit under guarantees from one manufacturer, making him responsible for the outcome, or to build a plant on independent lines, purchasing his machinery piece-meal, according to his own ideas as to what is needed for his conditions and materials.

Mr. Duerr's opinion is certainly entitled to a great deal of weight along these lines, both as the secretary of the association and as a practical sand-lime brick manufacturer, who put up his own plant along independent lines. The conclusion Mr. Duerr reaches is that if the machinery man knows his business, and has in his employ competent engineers who are also experienced in the manufacture of sand-lime brick, and who give proper attention to local conditions, a better and cheaper plant can be built for the client than he could build for himself.

We wish to add our testimony emphatically to that of Mr. Duerr along these lines. Of course, as machinery men, exploiting a system of our own and manufacturing our own outfits, we will naturally be considered as prejudiced and as looking at the matter from the machinery man's point of view. Granting all this to be true, it is also a fact that we have lost a very large amount of business in the last year or so by declining to sell our machinery piece-meal to parties putting up these independent plants; and the only reason we have taken this position is because we have found from experience that practically all such plants are failures, at least for the time being. Where a man has both the money and the nerve, and refuses to be discouraged, but keeps on experimenting to overcome his peculiar difficulties, we are free to say that he usually succeeds in working out his own salvation in course of time; and the experience is a very valuable but very costly one to him.

In all cases of this kind that have come under our observation, it has taken from three months to a year after the independent plant was started before a success has been reached in the manufacture; and we know of some plants started last spring along independent lines that have not yet got their brick on the market in a commercial way. In addition to this we also wish to state that we have never up to this time known of a single instance where a sand-lime brick plant has been started on independent lines that has not cost the owner several thousand dollars more in actual cash, before he makes a success of the manufacture, than our estimate on the complete guaranteed plant.

Under these circumstances, after making due allowance for our natural prejudice in favor of our own way of doing business as indicated by our ad. in this paper, we believe that some at least of your readers will credit us with a little altruism when we strongly recommend any one proposing to go into this industry to put out his entire contract into the hands of some one responsible and experienced concern, at a stated fixed price, under the strongest safeguards possible to obtain as to the ability of the manufacturer to make good his contract, and to cope with any unexpected problems that may come up; and also as to the return of at least the largest portion of the money invested in case of failure to make good the guarantees. In this way the intending investor puts the burden of proof on the other fellow, with the least amount of experiment, risk and cost to himself; and fewer failures will stand against a new and growing industry.

It is true, as Mr. Duerr says, that we are all learning, the machinery manufacturers as well as the brickmakers. This is inevitable in a new industry, less than four years old in this country. In fact, those who are most experienced among us are only now beginning to realize the tremendous future of this industry, as well as the immense amount that there is still to be learned in it. In this connection we can only quote the remark of the editor of a great trade paper with a national reputation in another line, who has made an independent investigation of the sand-lime

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fairly staggered when I contemplate the future of this new industry."

We must, however, take exceptions to Mr. Duerr's statement that the machinery manufacturer is not much better off in the matter of knowledge than the individual going into the sand-lime brick business. It seems to us reasonable to assume that those who have actually put up and started twenty of these plants in widely scattered sections of the country, on all kinds of materials and under many varying conditions, must be better fitted to install a successful plant and to cope with any unexpected problems that may arise on account of local conditions, than the individual whose only practical knowledge of the manufacture consists in having visited half a dozen more or less successful plants, and watching their operation for a few hours.

It is painfully true, as Mr. Duerr says, that competent engineers who have also had practical experience in operating sand-lime brick plants are not floating around; so that it is as yet practically impossible for intending investors to hire such a man to take charge of an independent plant. Such men are still very few, and are all either employed by those installing plants, having been trained by them to the work, or are now actually engaged in the operation of successful sand-lime brick plants. So long as this condition of affairs continues, we submit that the above advice to intending manufacturers of sand-lime brick holds good.

AMERICAN SAND-LIME BRICK CO.

Sand Brick in Iowa.

CEDAR RAPIDS, IOWA, January 20.—Calling on our friend, William King, the honored treasurer of the National Sand-Lime Brick Association, we had the pleasure of going through his plant and noting the conditions under which he operates. The plant is known under the firm name of Kings Crown Plaster Co., as they have long been producers of hard wall plaster. This plant is very valuable and is peculiarly situated with reference to its sand. The sand is pumped direct from the river which flows by the plant, by a Morris sand pump, and the slush deposit in the settling reservoir adjacent to the plant where it is taken by a conveyor to the dryer, from the dryer into a mixing and measuring apparatus, where it is mixed with the lime and passed on into the press. The lime is hydrated in an especially constructed vessel placed beneath the cars at the same time the brick are hardened.

The firm being large builders' supply dealers, has been rather fortunate in the disposition of their product. Mr. King states that since the first of November they have been able to dispose of the brick almost as fast as manufactured. Before passing over the matter it might be well to state that this firm is using a dryer of their own design, one which has proved very satisfactory in their plaster mill which was used for the same purpose, namely, drying the sand. There are patents pending on this dryer, and it is probable that it will soon be put upon the market. Mr. King states that they have had less trouble with drying their sand than any other plant that he has come in contact with.

The standing of Mr. King and the secretary and treasurer of the company, T. C. Murger, in the community, has probably had much to do with the readiness with which the product has been accepted in this place, as the above men have been very prominent in any movement which was for the benefit of the city. Mr. William King is at present on a trip to Cuba, both for business and pleasure.

The brick have been selling there, depending upon the grade, from \$7.50 to \$12.00 per thousand, and have gone into churches, opera houses and industrial works. It is probable that the capacity of the plant will be increased within the next six months.

The Concrete Building Stone Co., New York, N. Y. Capital stock is \$20,000.00. A. Quenzer, of Brooklyn, H. Benoit and E. L. McBurney, of New York, are the directors.

The Iowa Building Block Machine Co., of Waterloo, Iowa, has been organized with a capital stock of \$60,000.00. The company will manufacture and sell building block machines. The company will not erect a factory at the present time. The officers are: G. L. Dixon, president; H. L. Green, vice president; A. B. Burgess, secretary; D. P. Faus, treasurer.

Sketch of the Originator of the Cement Block Industry.

Harmon S. Palmer is unquestionably the originator of what is correctly described as "a revolution in building methods." He stated to a reporter at the convention of blockmakers, at Indianapolis, "that it had always been his desire to be of some benefit to mankind and to produce something by which he could realize that such had been the case, and as he looked over the convention, which was the outcome of persistent effort during twelve years of consistent toil and expense, unaided and alone, he could but not feel a just pride when he saw so many that are now willing to acknowledge the merits of hollow block construction, and so many who seemed to be trying to get around his patents."

Mr. Palmer, from childhood, has been an inventor, but like many others, has wasted time and money on schemes and theories only to find at the end that his energies had been misapplied and that the results were not appreciated by the public. In early life many patents were secured by him for improvements in farming implements, a knowledge of which he secured by daily contact in the field; he having been born and raised on one of the fine farms of Southern Michigan, Jackson County. It was here in the year 1872 that he invented the non-decaying fence post, the bottom of which was brick clay and afterwards concrete, on both of which he secured patents and was quite success-



HARMON S. PALMER,
INVENTOR OF THE CONCRETE BUILDING BLOCK.

ful in that line of business. Thus it will be seen at this early day his conception of the possibilities of concrete to the needs of mankind were well founded.

At the age of eighteen he engaged in the contracting and building business, an occupation to which he was well adapted, and by which he became fitted for perfecting the details necessary in using concrete for building purposes, which gradually drifted to hollow block construction. He became familiar with the characteristics of all building materials as well as their cost and relative value. He learned the requirements of building construction in shapes and sizes of brick and stone.

He was at one time a large contractor in sidewalks and pavements, and several cities of the South have miles of his work on which is stamped, "Laid by the H. S. Palmer Art Stone Co."

But as the price of cement sidewalks declined, more attention was given to building houses with the same material, and as Mr. Palmer, was always known as an aggressive competitor it was but natural that he should devise some means to cheapen his work and underbid his rivals; for this purpose the hollow block system was planned and finally brought to a successful issue which was at once grasped by the public building as one man,

and within three years has gone over the whole world like a flood tide.

It is needless in this article to describe the various ways and means which were used at various times to accomplish the results needed to make a success of hollow blocks; but there was one difficulty which had to be overcome, and that was a machine which would make the blocks. This, Mr. Palmer invented without a hint or suggestion from any person or printed matter whatsoever. It was entirely original, and to this day nothing has appeared which is an improvement on his machines or blocks, and of all the various devices for this purpose none have left the original conception and principles—so that all blocks are Palmer blocks to a greater or less degree of similarity the one with the other, each carrying a slight variation of the same idea.

It should be borne in mind that what now looks so easy was in reality quite hard to accomplish, and required much study and expense. Years were necessary to convince men with money that loans were safe on such houses and money had to be procured in other ways and invested in these new buildings solely on the faith of the inventor, and to say the least, many discouraging periods were passed; but, like all other improvements which have come to benefit mankind, some one had to be the pioneer, stand the brunt, expense and ridicule. In this case it was Harmon S. Palmer, but the reward is not wanting, and he feels that his success in life is merited by persistent push and energy in the right direction.

In view of the immense display at the convention at Indianapolis of blocks and machines, and the acknowledged merits of the industry throughout the world, and that for three years the ingenuity of the country has been directed to improving the hollow block industry; having a practical machine to start with, and no advancement of merit has yet appeared, it is certainly an evidence that Harmon S. Palmer is one of the master minds of the age in his chosen field.

Mr. Palmer lives in Washington, D. C., in an elegant home made out of his patented hollow blocks. He is president of the Harmon S. Palmer Hollow Concrete Building Block Co., and his two sons, Floyd and Clyde, are respectively, vice president and secretary. Their business has grown to great proportions and there is hardly a country on the globe in which some of their machines have not been introduced.

Chicago Hollow Wall and Concrete Co., at Chicago, Ill., has increased its capital stock from \$60,000.00 to \$120,000.00.

The Penn Concrete Co., of Philadelphia, Pa., has been incorporated. The capital stock is \$50,000.00. The company will manufacture building blocks.

A new company will be organized at Brunswick, Ga., for the manufacture of hollow building blocks, etc. John E. DuBignon is one of the promoters.

The West Liberty Concrete Co., incorporated at West Liberty, Iowa, by W. M. Lambing, F. A. MacDonald and H. N. Macdonald. The capital stock is \$10,000.00.

The Laketon Sand Brick Co., of Laketon, Ind., is the name of a new corporation; capital stock \$50,000.00. The incorporators: N. G. Hunter, G. L. Shoemaker, Tobian Gushard.

The Concrete Construction Co. has been incorporated at Portland, Ore., with a capital stock of \$10,000.00. The incorporators are: E. Wiles, Grace M. Wiles and H. C. Humphrey.

The Southern Ferro Concrete Co., of Atlanta, Ga., has been incorporated with a capital stock of \$30,000.00. W. H. Harrison and F. Beme are the incorporators. Buildings, sewers, etc., will be constructed.

The Hydraculic Building Stone Co., of Fort Worth, Texas, has been organized. The capital stock is \$15,000.00. T. W. Slack, R. H. McNatt, J. E. Bomar, E. B. Harrold and J. F. Burn are the incorporators.

The Builders' Concrete Stone Co., of Pawtucket, R. I., has been organized to manufacture artificial building blocks. Wm. H. Hathaway, of Onset, Mass., and Robt. H. Hogg, of Pawtucket, are the organizers.

The Clough Concrete Construction Co., of Quincy, Ill., has been organized with a capital stock of \$5,000.00. The company will construct cement work. J. G. Clough, E. S. Clough and W. D. Clough are the incorporators.

MORTAR SAND.

Read at the National Cement Association at Indianapolis.

BY J. C. HAIN, CHICAGO.

Can anything new be said about sand? The Romans made concrete 2,000 years ago, and were familiar with the requirements of a good sand, one of its important ingredients. Clean, coarse, sharp sand is generally conceded to be the best. With this in view, it is not surprising that apparently little can be said. Although the subject may seem to have been decided thousands of years ago, I still believe there is much to be learned. I can best illustrate my stand by calling your attention to a few sands, with more or less peculiarities, and compare their laboratory tests with a standard.

Allow me briefly to explain the conditions which lead to these tests. The Bridge Department of the Chicago, Milwaukee & St. Paul Railway Co., Mr. C. F. Loweth, engineer and superintendent, with whom I am employed in charge of the masonry, requires large quantities of sand in its substructures and culverts, which are principally built of concrete. In the last six years, we used a maximum per year of about 85,000 barrels, and a minimum of about 50,000 barrels of cement. This sources over the entire system of 7,000 miles, most of which are company sand pits. The problem before us was one of selecting the most suitable sand with the least haul. This led to laboratory tests of questionable sands. In many instances these tests were a great surprise to us. I will call your attention to some of the most peculiar of these.

Before doing so, I will briefly explain the tests. A one to three mixture was used throughout except where neat cement is specified. Each tensile test represents the average of three briquettes except in cases where one appeared exceptionally irregular, in which case it was thrown out. The different sands are grouped in the tabulation because each was tested with a different lot of Portland cement, as well as a different sample of the St. Paul standard sand. For these reasons, not only the test in pounds is given, but also the percentage any test is of the corresponding standard test. Thus the percentage gives a basis of comparison between the sands of different groups. The neat tests are also shown for comparison. All tests were extended to three years. Those not shown are still to be made.

One of the early questionable sands which needed our consideration, was a bank sand of glacial deposit, found near Elkhart Lake, Wisconsin, tests of which are tabulated. On first observation its fineness seemed to be the greatest objection. It contained some coarse particles, but the fine ones quired yearly. The sand comes from numerous will give you an idea of the amount of sand r— were in excess. Ninety-two per cent. passed through a No. 24 sieve, and 28 per cent. through a No. 50 sieve, while only 54 per cent. and 11 per cent., respectively, of the St. Paul standard passed through these same sieves. In other words, on these two sieves Elkhart Lake sand showed up twice as fine as the standard. However, on closer examination, a more striking peculiarity developed, which seemed even more objectionable than its fineness. Apparently the bank sand was a deposit of broken shells, because it could be easily ground into very fine particles by rubbing between two hard objects. When examined under a microscope it appeared to consist of fine grains of silica with rounded smooth surfaces, mixed with larger particles of softer material with sharper corners, which probably consisted of shells or a soft limestone. (Evidently the silica crystals had been worn round and smooth before the shell-like mixture was added.) While the larger chalk-like particles seemed to be soft, the silica was also easily crushed, but not so readily. When treated with hydrochloric acid it gave off a strong effervescence, indicating that we were probably correct in the supposition that it contained shells or limestone.

We had a particularly important job in the near vicinity where we wanted to use this sand, because this was the only available pit for several hundred miles. Though sand from this pit had been used for building purposes, for years, the question arose whether we were safe in using it for the concrete center pier of a draw span. A laboratory test was made in connection with our

St. Paul standard sand, for comparison. The results are shown in the table. While the Elkhart Lake sand tests vary from 60 per cent. to 99 per cent. of the standard, it averages throughout the tests up to two years, about 73 per cent. of the standard, which is a very good showing, considering everything. To make the comparison clearer, Ottawa sand, which was favorably recommended by the American Society of Civil Engineers as a desirable standard, developed an average strength of 80 per cent. of our standard up to two years. From this it appears that the fine shell-like sand from Elkhart Lake differs only by 7 per cent. from the standard sand recommended by the American Society. At all events, we decided to use it for the important job above referred to. The center pier in question was built from it, and the pier stands to-day as an excellent piece of concrete work which has plenty of life and ring.

My opinion of this soft, fine sand has improved. The laboratory tests were much better than I expected. The character of the concrete made from it appeared to be all that could be desired. An excessive haul was saved by using it. On the other hand, I am not in favor of using a sand of this character without first making laboratory tests. All soft, fine sands do not act alike.

Another sand in this same glacial district which was still more of a surprise than the above, was the Found sand, tests of which are tabulated. Its noticeable peculiarity was the presence of foreign material which resembled clay. The damp sand, when taken from the face of the bank, was plastic and readily caked in the hand like putty. The particles of silica were held together by the clay. A coating of fine material clung to the hand after handling it. To one accustomed to the usual specifications for a clean sand, free from foreign substances, this would fall far from being satisfactory. Laboratory tests were made, extending to three years. These tests, to our surprise, proved to be superior in every respect to our standard sand. The seven and twenty-eight-day tests of this were respectively 40 per cent. and 30 per cent. above the standard. The difference became less with age, although the three-year tests was 20 per cent. above the standard. This surely was contrary to the then general impression of a good sand, especially at the time these tests were started. The sand was found to contain 7.7 per cent. of fine material by decantation, that is material held in suspension, all of which was perhaps clay. There appeared to be no other peculiarities, and hence it was thought that this clay was beneficial to the sand. At all events, the sand tested so well that it was considered perfectly safe to use it for ordinary concrete purposes. The question of using it under water, where clay might retard setting, was not gone into.

I wish next to call our attention to Eagle No. 1 and No. 2 sands, shown in the diagram and tabulation. The former contained 3.2 per cent. of material held in suspension, while the latter contained 15.7 per cent. Eagle No. 1 was selected for the best sand in the pit, and No. 2 for poorest. Both sands seemed questionable. Before tests were made, we even doubted the advisability of using any sand from this pit, but decided to order out a shipment of the best (No. 1) for an unimportant job, and follow with tests. The tests proved the unexpected. To our surprise, both tested well, and what was a still greater surprise, the No. 1 Eagle which contained 3.2 per cent. of clay showed up poorer than the No. 2 which contained 15.7 per cent. The particular sample of St. Paul standard sand with which they were compared contained 3.4 per cent. of material held in suspension, largely clay. The strength of all three sands while irregular, appeared to be governed largely by the amount of material held in suspension, or, in other words, the amount of clay. We surely were mistaken in our first estimate of these sands.

Still another test, which proved the superiority of clay in sand in a different way, was the Jackson (Minnesota) pit sand, one sample of which was washed and one not. The unwashed showed up about 25 per cent. superior, although it contained 6 per cent. of clay. On the other hand, the washed sand averaged considerably below our standard, about 30 per cent., and the unwashed a trifle below, though very close to it. This comparison to the standard sand is contrary to what we found in the previous sands from the Eagle pit, because the unwashed Jackson sand which contained 6 per cent. of clay, did not test better

than the standard sand which contained only 1 per cent. By looking further, however, and comparing the fineness of the Jackson and standard sand, as per tabulation, it will be seen that the standard is a much more desirable mixture of fine and coarse particles, which the writer believes accounts for the discrepancy, and which will be touched upon later. This is another example where the presence of clay improved the sand.

The above tests of sand containing clay in their natural state, as well as many others which I have not taken time to mention, tend to prove that the presence of a small percentage of clay is not objectionable, but on the other hand, may be desirable. This, however, does not prove that sand containing ordinary soil is better than one without it. To decide this, we made a series of tests of washed sand to which was artificially added 2, 5, 10 and 20 per cent. of rich surface soil consisting principally of decayed organic matter. The soil was taken from the bank of the Chicago river where undisturbed weeds had thrived and decomposed season after season, and made the richest kind of soil. The results were disappointing. They were neither decidedly inferior nor superior, but proved quite irregular. The tests up to two years showed that at some period they were above the sand containing no soil, while at others, they were below. The percentage of soil added did not cause the tests to follow any definite law. The 20 per cent. adulteration had comparatively little different effect than the 2 per cent. As a whole the average strength of the tests up to two years, was about the same as the clean test, but the irregularity was so great as to make the artificial sands less desirable than the natural. The diagram will make this clear. It would seem from that that sand with a small admixture of soil ought not to be condemned without first making tests, but on the other hand, it is not so desirable as one without soil. Sands of this character (ones containing soil which consists of decomposed vegetable matter) are rarely found in nature. The soil simply overlays the sand pits, and can easily be stripped off. A rare case of river deposit might occur which contained soil; though rare this is contrary to expectation because of the difference in specific gravity of the sand and soil. The two are seldom deposited together. (The natural sands are generally found mixed with clay, which consists of decomposed rock.)

Let me refer you to an article published in the *Engineering News* of November 19, 1903, by Prof. C. E. Sherman, of the Ohio State University, in which he reports laboratory tests up to one year, of Portland cement, with different sands mixed with 0, 2, 4, 6, 8, 10 and 15 per cent. (by weight) of clay and also loam. With very few exceptions the adulterated sand tested superior to the natural sand. In most cases the 10 and 15 per cent. mixtures tested quite uniformly and proved superior by roughly 25 per cent. With one exception the clay showed up slightly better than the loam mixtures.

His artificial clay sand tests proved the same as our observations of natural sands containing clay. His artificial loam sands tested superior to our artificial soil-sand. This latter difference is perhaps due to the difference in character of the material added. He describes the loam as "a common field soil obtained from the field north of the power house on the State University campus." Quite probably, in place of all decomposed material it contained some clay, and possibly some sand. This is the only way I can account for the superior comparative showing of the loam tests he made over our comparative soil tests. A small quantity of clay in the loam would change the results.

I will add here that there are two ways in which foreign material occurs in sand banks, one in the form of a firm material, uniformly distributed throughout it, and another in the form of layers or pockets which are entirely distinct from the sand. The cases mentioned, both natural and artificial, were the former. A specification which permits a definite amount of foreign material, must however, exclude all sand in which such material is not uniformly distributed throughout the sand, or in other words a part of it.

There are still other peculiar sands to be met in nature. Your attention is especially called to one other natural sand which seemed to me most striking. It was excavated in Kansas City on the location of a freight house foundation, which in

the flood of 1903 was several feet under water. From appearance and action it was hard to determine whether it contained a larger percentage of clay or sand. What grains it contained were so fine that they were scarcely perceptible to the touch. The quantity of clay seemed large because the trenches stood perfectly vertical under ordinary conditions. From the grit I concluded it was sand, with a rather large percentage of clay. Tests were made of it and up to date we have the one year results. It proved to be a very fine sand which contained about 12 per cent. of material in suspension, largely clay. The most striking peculiarity was its fineness. Everything passed through a No. 100 sieve, and 93.5 per cent. passed a No. 200. In fineness it was far superior to cement. I know of only one cement which is guaranteed 85 per cent. in fineness on a No. 200 sieve. The usual specifications require about 75 per cent. Under an ordinary lens, the grains of this sand were not visible. They appeared to be mostly smooth grains of silica.

The tests proved as interesting as the fineness. The early ones were low. The seven and twenty-eight-day averaged about 35 per cent. of the standard. The three months showed a good grain, while the six months and one year averaged about 77 per cent. of the St. Paul standard, which is about the same showing made by the Ottawa sand recommended as a standard by the American Society of Civil Engineers. The 12 per cent. of foreign material, presumably clay, quite likely helped to improve the tests. I consider that this fine sand shows up remarkably well, in view of the fact that it is finer than the finest cement, and that 93 per cent. passes a No. 200 sieve. It quite likely could be used in massive masonry, were it possible to allow the concrete to set for a year before subjecting it to severe strains.

I might call your attention to many other sands from along our line, which have been tested in our laboratory. The foregoing however, illustrate the peculiarities most strikingly. Before concluding I wish to say a little more in regard to the effect of washing, and also the effect of fineness of sand in general.

It will be remembered that the washed Jackson sand tested inferior to the unwashed which contained 6 per cent. of clay. The washing was done according to the laboratory practice (decantation). Immersed sand was shaken up in a water bottle, and allowed to settle. The portion held in suspension was poured off. This process was continued until nothing was held in suspension. It will be seen that this method of washing differs widely from the regular practice used at the sand pits. It is my opinion that the Jackson sand would not have tested as well had it been subjected to regular washing in place of laboratory method. The finer particles of sand would have been carried off with the clay. This would have left larger voids in the sand, and consequently it would not have tested as satisfactorily. (I will bring this out more clearly in the discussion of the fineness.) Therefore, I believe that washing, on general principles, is not desirable unless conditions are unusual. At all events, the sand should be tested, washed and unwashed, before going to the expense of fitting up a plant for washing. Unless the sand naturally contains an excess of fine particles, or of foreign substances, I doubt if washing will better it.

Next in regard to the distribution of fine and coarse particles; a study of the table of fineness will show that the strength of sand depends to a considerable extent on the proper distribution of the fine and coarse particles. The Ottawa sand, which was favorably recommended by the American Society of Civil Engineers, does not test well because of the fineness is limited between a No. 20 and 30 sieve. It is natural to expect that the absence of small grains leaves larger unfilled voids and consequently the tests are not as strong. Tests of this sand only averaged about 80 per cent. of the St. Paul standard. I attribute the good showing of our standard largely to the better distribution of the different sized particles.

It is difficult to decide what distribution of grains would be most suitable. Please note, however, that the meshes of one sieve are about one quarter the size of the next larger sieve, and that if there are 40 per cent. of voids in the sand held between two sieves, there ought to be about the same amount of sand held between the next smaller sized sieves, or enough to fill these voids, etc. On this assumption I have figured out and

tabulated the fineness of sand that ought to give the best results. A sand might vary from this considerably and yet not alter materially because some other distribution of particles might result in as few voids, with only a slight increase in the surfaces to be coated with cement.

By comparing the excavated Kansas City sand with the fine "track elevation" sand, it will be seen that the finer of the two, though it is much finer and hence has considerably more surface, tested better. This I think is partially accounted for by the undesirable distribution of the particles in the "track elevation" sand. Eighty-three per cent. of the latter sand is held between a No. 50 and a No. 100 sieve and the percentage of fine particles below this is not enough to fill the voids. However, as stated in the earlier part of this paper, the fine flour-like sand has the advantage of 12 per cent. clay; but this alone, in my judgment, does not account for the difference in showing. I also attribute the low tests of the Rockton sand shown in the tabulation to the same cause. There are not enough fine grains below the No. 50 sieve to fill the voids of larger particles. We have made a great many other tests which tend to prove that this supposition is correct, but which I will not take time to go into.

To sum up the situation, it is quite evident that clay in limited quantities (say not to exceed 12 per cent.) is beneficial if thoroughly distributed throughout the sand. Before using, however, it ought to be compared with an established standard.

Soil on the other hand, is detrimental. Sand containing it shows up irregularly. Such sand should be proven satisfactory by tests before using.

Washed sand may be less desirable than unwashed. Washing removes the fine particles as well as the foreign material. The fine grains, if not in excess, are needed to fill the voids of the larger.

The only safe way to decide whether sand should be washed, would be to test it under both conditions.

A fine sand may show up well if the grains are well graded. A coarse sand may show up poorly if there are too few fine particles to fill the voids. The best graded sand is one in which the grains held on a uniform series of sieves is so arranged that the voids in one lot are filled, and not over-filled, by the grains in the next smaller size, and so on. This grading should begin with large grains in order to limit the surface exposed to cement, and still the grains must not be so large that the voids will not be filled with the smaller particles.

Briefly, then, the best mortar sand found in nature is one with sharp corners, rough surfaces, with grains neither coarse, medium or fine, but with the proper mixture of all these sized particles which will result in the least voids. The sand, also, should not be washed, but may contain up to 12 per cent. of clay, which will not injure, but will perhaps improve it.

The Riverside Cement Block Co. has been organized by W. J. Hitt and Q. A. Curtess at Janesville, Wisconsin.

The Concrete Plant Manufacturing Co., of New York, N. Y., has been incorporated with a capital of \$5,000.00. The company will deal in concrete supplies. F. Dedek, Bellmore, N. Y.; J. Scherer, Brooklyn, and T. H. Knapp, New York, are the incorporators.

The Passaic County Miracle Pressed Stone Co., Paterson, N. J., will shortly begin operations. Those interested in the company are: J. H. Wentling, N. Warmalts, M. Gable, J. J. Ritchie and A. Vreeland, of Butler. A plant will be erected at an early date.

The Red Lion Hollow Block Co., of Red Lion, Pa., is a new corporation, with the following officers: President, J. Hersh, of Wrightsville; vice president, G. A. Wagman, of Dallastown; treasurer, J. W. Zarios, of Red Lion; secretary, H. E. Creley, of Red Lion.

The officers of a new concrete block company just organized at St. Joseph, Mo., are as follows: J. Geiger, president; J. A. Schorer, vice president and general manager; G. F. Casey, secretary; J. H. Robison, treasurer. Operations will begin shortly. The capital stock is \$10,000.00.

The Concrete Stone and Construction Co., of Greenville, Ill., has just been organized. Capital stock, \$2,100.00. W. B. Beardsley, E. DeMoulin and C. A. McCracken are the incorporators.

Efflorescence on Concrete Blocks.

In response to a number of inquiries from manufacturers of concrete building blocks with regard to efflorescence, which is the correct name of the whitish deposit that comes out on concrete stone, and looking to the preventing of its appearance we have communicated with a large number of well qualified experts and will present their several opinions upon this interesting subject as a continued article from month to month.

CLEVELAND, OHIO, February 21.—The Standard Sand and Machine Co. have this to say regarding the subject:

"Definition—Efflorescence is a white mould upon stone, brick and other non-perishable building materials, resembling that of mildew on fruit and foliage.

"Cause—It may be caused by acid or free lime on concrete, or from salt or kiln burned materials, while in artificial stone it is mostly caused by improper seasoning of the product after same has been taken from the mould.

"To remove from brick apply muriatic acid with a brush; acid may first be diluted with water at a proportion of six parts water and one part acid, in artificial stone the cause has much to do with the method of removal; if caused by improper seasoning (hardening) of the material is in most instances removed with an application of gasoline applied with a scrubbing brush, and vigorous scrubbing is sometimes necessary.

"When caused from free lime in the cement or when lime has been added, it becomes a difficult task to remove permanently, as it is liable to reappear after the surface has been cleaned, which is best done with a solution one part disulphide of carbon and twelve parts gasoline, applied with a sponge or cloth and scrubbed with cold water about two hours afterwards.

"The following will remove the most stubborn efflorescence and stains from any artificial stone, marble and granite. One pound white vitriol, three pounds oxalic acid, mixed and pulverized and mixed dry with thirty pounds wheat flour, mix with water to the consistency of a paste and apply with a brush, let remain from four to twenty-four hours, depending on the nature of the stain, and wash off with a scrubbing brush and cold water."

DENVER, COL., February 20.—The American Hydraulic Stone Co. tell us: "The alkali deposit to which you refer is very largely eliminated in our process of manufacture, and only appears where an excess of alkali obtains in the water used for mixing.

"We use very wet coarse concrete for the body of the block. After the mould is filled, a gauge is used for striking out $\frac{1}{4}$ in. out of the top of the mould, and this space is filled with face matter, consisting of a fine sand, cement, marble dust, or other face material mixed quite dry; in fact, the face matter is only dampened. If we were to apply the face matter quite wet, the whitish deposit you mention would appear on all blocks. As our blocks are made face up and, when released from the mould, rest upon the face, the excess of moisture in the body of the block goes down through and thoroughly sets the face matter."

How to Manufacture Artificial Granite.

Artificial granite is one of the latest inventions known. A patent has just been awarded L. A. Garchey, of Paris, France, for its manufacture. Melted glass is poured into heated moulds, which are lined with an insulating or protective substance. Magnesium carbonate is generally used for this purpose. The glass is allowed to cool very slowly, which causes it to become devitrified. Powdered mica and metallic oxides may also be used together with the glass, which gives the product the natural appearance of granite. In the event that a blast furnace is used for producing the glass the composition to be fused must first be moistened in order to prevent scattering by the blast.

The Wisconsin Portland Cement Co., at Portage, Wis., was incorporated with a capital stock of \$750,000.00. The incorporators are: S. M. Babcock, Joseph M. Boyd and F. H. Merrill.

The Great Northern Cement Co. at Marlborough, Mich., will enlarge its present capacity of 1,000 barrels of cement a day to 4,000 barrels. The company was started six years ago. Its buildings, covering a large area, were originally constructed with a view to the present expansion which was foreseen at the time.

Brick Made from Tailings.

JOPLIN, Mo., February 21.—Mr. Clyde C. Buckingham says: "A company is being organized at this place by Mr. W. C. Johnson and capitalists of Danville, Ill., for the purpose of manufacturing brick out of the dump piles (or tailings) which come from the zinc mines. A scientific test has been made of the sample brick made from tailings and the brick are pronounced high grade. The use of the tailings in the making of brick is a new departure, but promises to become an important industry. A plant costing \$100,000.00 will be installed as soon as spring weather comes, and the factory will be in working order probably by the first of June. The capacity of the plant will be 80,000 brick per day, making it one of the largest plants in the West."

Brains and Experience Are Necessary.

PORT HURON, MICH., February 10.—Marcotte-Forbes Co., manufacturers of cement blocks say, "We have been forging ahead since the first of last October. Our sales are running low. We are finishing up two jobs and have five more to start on as soon as we can get at them and it looks O. K. for the spring trade. People here have become a little educated in block business during the last few months with the conclusion that there is certainly a difference in concrete blocks. There are in this city at the present time about twenty second-hand block machines for sale by different individuals and firms who know more about the business now than they did a year ago."

"We are enclosing a check for two years' subscription to Rock Products, as we read everything in it with interest and study it afterwards."

"It does seem strange to me that others than block machine men do not give their views and experiences on concrete matters. Personally, I have not found many block machine men who know what they are talking about. I like what Mr. Elmer E. Stanton has said about the facing of concrete blocks, 'Brains and experience are necessary to handle successfully concrete business.' This is certainly a point which ought not be overlooked."

Will Push Their Product.

SALINA, KAN., February 17.—The Salina Hydraulic Stone and Brick Co. say: "Last year was our first attempt in the artificial stone business, and much of our time was taken up in the necessary improvements, and we did not accomplish very much for that reason, and again we had considerable experience in the way of educating the community up to an understanding of our product. Clay brick people, as well as the bricklayers, have bucked our product as much as possible. We can not quite compete with brick because they are selling them as low as \$7.00 a thousand, but we are going to push our product to the front this summer and secure all the jobs possible, even if we have to meet this price. We have one of the best equipped artificial stone plants in central Kansas, having bought last year forty acres of ground where we can get plenty of sand. We manufacture building blocks under the American Hydraulic Stone Co. patent, W. J. Scott, 60 Washington Street, Chicago, Ill. being the owner of the State of Kansas for the Ferguson patent. He also owns several other states. Salina is right in the midst of a rich agricultural and stock raising country."

Artificial Marble for Floors.

TORONTO, ONT., February 5.—Coral marble is a new and beautiful product especially designed for the manufacture of floors of all kinds. It is uniformly considered to be prettier than tile; comes much cheaper and is nicer to walk on and it can be made in any pattern or design with ease. It is manufactured by the Canadian Coral Marble Co., of Toronto, and the ingredients and process of manufacture are covered by letters patent. The new material is being introduced very satisfactorily and very widely throughout the Dominion of Canada, and it is said that a company is being organized to manufacture coral marble in the United States under the patent rights. The manufacturers inform us that they have floors now in many parts of Canada that have been down between three and four years that are better to-day and prettier than they were the day they were laid, showing that the longer they are down the nicer they become. They further say, "We put our product down on top of old floors where we have an old solid floor. We cover it with cement and

put it down in a soft material and then stamp in our pattern right through it, and when it becomes hard we have our pattern in the floor, either borders, squares, tiles or flowers, and the whole soon becomes one solid floor and has no receptacles for dirt of any kind, and is perfectly sanitary for hospitals, hotels and public and private buildings. Another high recommendation for the material is that frost has absolutely no effect upon it."

"There is a kind of scagliola made, but we claim that we do a finer class of work altogether than anything which is known by that name. When we sell our patent rights for coral marble in any given district we teach the purchaser the secret process of making myceman marble which is so highly recommended all over the country for hotels and other buildings."

Pope Bros. will establish cement block plants at Sedalia and Boonville, Mo.

The Diamond Brick Co., of Muncie, Ind., recently incorporated, will soon begin the manufacture of sand-lime brick.

F. M. Bacon, of Plainfield, N. J., has invented a machine for manufacturing concrete blocks and will begin operations very soon.

The Granitold Construction Co., of Nashville, Tenn., has been organized to manufacture concrete blocks. W. M. McDonald is interested.

The Mastic Wood Fiber Plaster Co., of Indianapolis, Ind., has been incorporated to manufacture cement blocks, bricks, etc. The capital stock is \$50,000.00.

The Fort Wayne Cement Stone Co., Fort Wayne, Ind., has been incorporated with a capital of \$5,000.00. The directors are: J. Remms, L. C. Jocquel, W. Remmes.

The Granite Sidewalk Co., of Milwaukee, Wis., has been organized with a capital of \$2,000.00. The incorporators are: A. J. Zielski, C. Klos and John Maclolek.

The American Cement Construction Co., of Milwaukee, Wis., has been incorporated by: F. D. Quin, F. J. Welckmueller and F. J. Rodee. The capital stock is \$10,000.00.

The Aberdeen Sand-Lime Brick Co., of Aberdeen, Miss., has been incorporated with a capital stock of \$70,000.00. G. T. Rather, A. J. Brown and others are the incorporators.

The Lake Erie Cement and Construction Co., of Norwalk, Ohio, incorporated; capital \$50,000.00. Incorporators are: W. T. Hood, J. W. Cheseround, J. F. Hufford and others.

The Alamo Cement Co. of San Antonio, Texas, has incorporated with a capital stock of \$10,000.00. Incorporators are: Chas. Baumberger, E. W. Cook, Albert Kronosky and Nic Bohler.

Snyder Brothers have incorporated at West Hoboken, N. J., with a capital of \$10,000.00, to manufacture concrete blocks. Joseph G. Edwin H. and John H. Snyder are the incorporators.

The Metcalf Stone Co. is a new company organized recently at Princeton, Ind., and will be ready for business April 1. They will make concrete building stone and other concrete material.

The Manhattan Sidewalk Co., of New York City, has been incorporated with a capital of \$3,000.00. The directors are: Thos. Hafton, New York; O. C. Kunze, Newark, N. J.; R. J. Farrington, Brooklyn.

The Chicago Artificial Stone Co., Chicago, Ill., has been incorporated. Capital stock \$20,000.00. Wm. Gleck, W. A. Williams, G. W. Cole, T. W. Buzzard, and W. R. Southard are the incorporators.

The Stevens' Point Artificial Stone and Brick Co., Stevens Point, Wis., has been incorporated with a capital stock of \$5,000.00. J. W. Maxon, D. A. Crocker and T. H. Hanna are the incorporators.

The Youngstown Artificial Stone Co., Youngstown, Ohio, has been incorporated with a capital stock of \$25,000.00. T. Behan, W. E. Ludy, A. J. Loftus, J. W. Caminsky and J. F. Hynes are the incorporators.

The Marbleoid Co., of New Durham, North Bergen, N. J., has been organized, with a capital stock of \$50,000.00, divided into 1,000 shares of \$50.00 each. The incorporators are: Frederick West Page, East Orange; Robert W. Page, Newark, and Frederick M. Page, New York. The company will manufacture and sell an imitation marble.

Slate.

Slate Depression in England.

The slate industry in England is suffering a considerable depression. During the strike in the Penrhyn quarry district much foreign slate was shipped into the country from other slate centers, principally from France, and in this way gained considerable permanent trade.

During 1903 foreign slate to the amount of 119,805 tons were received in England. While the past year has witnessed a large falling off in this respect, the manufacturers of England still suffer from this first great invasion, and the industry has been materially injured. 21,094 tons of foreign slate, from seven countries, were imported by England during the quarter ending September 30, of last year.

Big Demand for Structural Slate.

EASTON, PA., February 17.—The Pennsylvania Structural Slate Co. write us the following: "The demand for structural slate at this season of the year far surpasses any we have ever experienced in a number of years. The outlook for spring trade for 1905 is certainly very promising and we predict that notwithstanding our increased facili-



MAINE FARMHOUSE COVERED WITH BROWNVILLE SLATE.

ties, we will be unable to take care of more than two-thirds of the orders, which we will receive in our line. Structural slate for all interior purposes seems to have grown in demand very rapidly in the past few years, as prior to 1903 marble was universally used.

The comparative cost of slate over marble is a feature which is bringing the former into prominence, and there are but few modern buildings constructed to-day that do not contain more or less slate in their interior furnishings. For marbleized wainscoting, bathrooms, slate slabs, hearths, under kitchen range, laundry tubs, steps, risers and platform, and other purposes slate is becoming very prominent in the construction of flat buildings and dwellings. It is surprising how many inquiries are being received by us from Southern points, which show that slate is becoming an important factor, not only throughout the North, but the South as well."

Brighter Outlook for Slate.

CLEVELAND, OHIO, February 20.—In a recent interview with Mr. Frank Conger, of Auld & Conger, Cleveland, Ohio, he said that the fight was still on and it was at present a stand-off as to whether sandstone or granite would go into the new federal building.

Speaking about slate and future building prospects, he said that as yet everything was very quiet with them and every other operator at Bangor, Pa., but all would begin operating again just as quick as the weather would permit. He sees enough in present inquiries for slate and the general attitude of his customers, to predict a banner year for the slate men.

In Ohio, Indiana and Michigan, the states known as the older and larger users of slate, there is a decided tendency for the erection of a better class of buildings than formerly, which means an increased use of slate. In the states which are newer purchasers of slate there are many inquiries for prices from new people in the business.

Roofing.

The National Association Master Composition Roofers.

Emil Macwith, Buffalo, N. Y. President
H. C. Smithers, Indianapolis, Ind. First Vice-President
P. LeGoullon, Pittsburg, Pa. Second Vice-President
W. K. Thomas, Chicago, Ill. Secretary and Treasurer

DIRECTORS.

E. S. Bortel, Philadelphia, Pa.
C. A. Monks, Louisville, Ky.
T. S. Harkness, Cincinnati, Ohio.

The Executive Board consists of the officers and directors.

Committee on Laws: E. F. Shaffer, Columbus, Ohio; A. B. Bartholomew, Memphis, Tenn.; C. A. Monks, Louisville, Ky.

Official Organ Rock Products.

THE OBJECTS OF THE ASSOCIATION ARE:

To maintain an organization for the benefit of persons engaged in the business of Composition Roofing; to promote uniformity in the customs and usages of Composition Roofers, to inculcate principles of justice and equity in business; to acquire and disseminate among its members valuable information in reference to the manner and methods of doing work; to establish and secure the use of a superior quality of material and workmanship; to facilitate the speedy adjustment of business disputes; to aid and encourage the formation of local organizations, where practicable, and generally to secure to its members the benefits of co-operation in the furtherance of their legitimate pursuits.

ROOFING MEN MEET.

The Fourteenth Annual Convention of the Association Held at Indianapolis, Ind.

The fourteenth annual convention of the National Association of Master Composition Roofers of the United States, was held at the Claypool Hotel, Indianapolis, Ind., on Thursday and Friday, February 16 and 17, with a large attendance. The meeting was called to order by the president, J. B. Ohlgschlager at 10:30 o'clock on Thursday morning. There was nothing of special importance done at this session, which was mainly devoted to renewing old acquaintances and general preliminary to the regular business session.

The afternoon session was called to order at 2 o'clock. The secretary called the roll of members and read the minutes of the last meeting which were approved. Ed T. Nolan was elected to fill a vacancy on the Committee on Laws, which was composed of H. C. Smithers, chairman, and C. A. Monks.

The following committee was appointed to draft resolutions of condolence to be forwarded to the families of the deceased members, which was composed of E. Mackwith, of Buffalo, N. Y., and F. Curran, of Marion, Ind.

Col. W. M. Powell, who was formerly a member of the association, but who had been requested to be present, was absent on account of illness, sent his regrets at his being unable to be present. In his absence two papers, one written in 1888 and the other just previous to the meeting, were read by the secretary.

A general discussion followed the reading of these papers and then it was moved to adjourn, which was made unanimous.

The Friday morning session was devoted entirely to matters that could not be given out for publication.

At the Friday afternoon session the following new members were admitted to the organization: Keystone Roofing and Supply Co., Terre Haute, Ind.; Ed F. Nolin, Muncie, Ind.; Harkness & Towle, Cincinnati, Ohio; John Buyer Roofing Co., South Bend, Ind.; F. B. Curran, Marion, Ind.; T. F. Smithers, Indianapolis, Ind.

At this meeting papers were read by the following: F. D. Renaud, Henry C. Smithers and W. K. Thomas.

The secretary and treasurer's report was read and adopted.

OFFICERS ELECTED.

Then came the election of officers which resulted in the following being unanimously elected: E. Mackwith, Buffalo, N. Y., president; H. C. Smithers, Indianapolis, Ind.; first vice president, D. P. LeGoullon, Pittsburg, Pa., second vice president; W. K. Thomas, Chicago, Ill., secretary and treasurer.

The following board of directors were also elected: E. S. Bortel, of Philadelphia, Pa., chairman; C. A. Monks, of Louisville, Ky., and T. S. Harkness, of Cincinnati, Ohio.

Among the most important features of the convention was a discussion of the National M. C. R. Brand of roofing felt. Considerable time was consumed in discussing the importance and necessity for urging the adoption of this felt, owing to its many advantages. This roofing felt, it is claimed, is fire proof and has a number of advantages over the ordinary roofing felt. It was agreed that each member would do what he could to urge its popularity and increase the demand for it among architects and contractors. Several samples of cement shingles and roofing tile were on exhibition during the convention which attracted considerable attention.

The social feature consisted of a theatre party given by Fred Jones, of the Barrett Manufacturing Co., on Thursday evening, which was attended by all those present.

The vote taken with regard to the next meeting place resulted in a majority favoring Buffalo, N. Y., the dates of which are to be arranged by the executive committee.

The papers were omitted owing to lack of space. These will appear in subsequent issues.

Roofing Men To Enjoy Prosperous Year.

The roofing fraternity is busy making preparations for one of the most active seasons as yet experienced. After a winter of unusual length and severity, and it might be added that it is not quite at an end, they are laying plans for a campaign of no small magnitude. Undismayed by the drawbacks attendant upon a few months of inactivity they feel that the approaching season will more than repay them for the enforced dullness.

Building operations are being contemplated in such large numbers that the roofer has every reason to feel hopeful. According to the reports the architects have never been so actively engaged, which means that the roofing material men will come in for their share of business.

New materials are being launched upon the market which are proving popular, while not materially decreasing the sale of the well known articles. Slate is gaining in volume; composition roofs are increasing; gravel and tar are still favorites in many localities and cement is making itself felt as one of the latest ideas for house covering.

With the advent of spring the rush will be on and the roofers will be in high spirits. The indications all point to a year of good prices, large orders and a general awakening of this growing industry.

The Barber Asphalt Paving Co., Philadelphia, Pa., are placing on the market a new sand surfaced ready roofing material which they claim is somewhat in advance of anything heretofore produced.

The Akron Roofing Co., Akron, Ohio, has just been changed from a co-partnership to a stock company. The capital stock is now \$5,000.00. The incorporators are: William W. Pfeiffe, George J. Pfeiffe, Henry P. Victor, Anne M. Victor, Louise H. Pfeiffe and Emma Pfeiffe. The plant will be materially enlarged and business will hereafter be conducted on a larger scale.

Manufacture Cement Roofing Shingles.

HAMLER, OHIO, February 24.—That cement as a roofing material is well beyond the experimental stage, and that cement roofing tile and cement shingles are here to stay, is well proven by the handsome and substantial brick plant of the American Cement Roofing Co., at this place.

Some four years ago the president of this company, Mr. Henry Baden, while on a pleasure trip in Europe, had his attention called to cement tiling and shingles, and investigated them before coming home and concluded that they were a good thing and set to work to develop a machine to make them, and called the attention of several of his friends to the fact that this was a coming industry. Shortly afterward they, Mr. O. A. Stuve & W. H. Peper, became interested with him and aided him. Later, another gentleman who had been in Europe about the same time, came along, who had some good ideas about manufacture. These were added to what had previously been formulated, and patents were taken out in December, 1903, and a company organized to manufacture the shingles, as well as the machines. This plant started in May, 1904.

Nine machines were run to their full capacity all summer and the entire output sold readily. Owing to the demand for machines elsewhere only six were operated during the winter. They have been putting on roofs right along all winter regardless of the weather. They started in locating plants elsewhere last August and now have about twenty-five plants using these machines.

The shingles are diamond shaped, 14x14x $\frac{3}{8}$ in. thick and are made in any color. One machine makes enough to cover 2 $\frac{1}{2}$ to 3 squares per day.

This firm still mixes its material by hand, but will soon put in a concrete mixer operated by power.

The building is L shaped, two stories high, 24x70 ft. and 35x45 ft. The upper story is used for the storage of raw materials and the ground floor for manufacturing.

While the shingles can be put out in a few days in cold weather they are kept moist and warm for two weeks before being exposed to the frost.

The officers of the company are: Henry Baden, president; O. A. Stuve, vice president; W. H. Peper, secretary and treasurer. It is claimed that the cement shingle cost less than a wooden one on the roof and that they need no paint and never wear out. They do not require skilled labor for either manufacture or for laying on roof.

Chicago Roofing Notes.

CHICAGO, ILL., February 20.—Roofers are looking ahead now for an active season as soon as building gets a good start. The season promises to be a very good one. Some trouble, however, is brewing. The Gravel and Composition Roofers' Union is about to demand five cents an hour increase on wages. The men are now paid 50 and 60 cents an hour. The present wage agreement expires on Wednesday, March 1, and it was intended to ask the contractors to renew the wage scale for another year. The contractors seem to think wages as allowed at present are high enough.

The Lamar Brick and Stone Co., of Lamar, Col., has been organized with a capital stock of \$50,000.00. W. C. Gould, W. J. Wayne and L. W. Markham are the incorporators. Aside from the manufacture of sand-lime brick, the company will make roof tiling from sand and lime. Plans are under way for extensive operations.

The National Roofing Co., of Tonawanda, N. Y., suffered a \$2,000.00 loss by fire on February 16. The damage was caused by the boiling over of a large pot of tar.

A New Roofing Becoming Popular.

Cement roofing shingles appear to be growing in favor. The use of this material seems to be limitless, and the recent manufacture of a roofing from it has only demonstrated the adaptability of cement for many purposes. A number of new organizations have recently entered this field, and judging from the favorable reports, this industry has already gained a strong foothold on the public. As to durability, cheapness and pleasing appearance these shingles will grow in favor, and will soon take their place among the other well known roofings.

Plaster.

The National Plaster Manufacturers' Association.

Meets Semi-Annually.

H. E. DINGLEY, Syracuse, N. Y., President
A. H. LAUMAN, Pittsburg, Pa., First Vice President
L. O. POWELL, Toledo, Ohio, Second Vice President
JAS. LEENHOUTS, Grand Rapids, Mich., Third Vice President
ALEXANDER FORRESTER, Cleveland, Ohio, Treasurer
E. H. DEFEBAGUH, Louisville, Ky., Secretary

Official Organ, ROCK PRODUCTS.

Will Soon Be Under Way.

NEW ALBANY, IND., February 28.—The New Albany Fiber Wall Plaster Co. is at last about ready to begin operations. The company has experienced so many delays, owing to the severe winter, that operations have been materially retarded. They will pump their own sand out of the river and will manufacture first-class hard fiber wall plaster. Mr. Slider says that he anticipates doing a fine business. Inquiries are coming in so rapidly that they are confident of finding a ready demand for their product.

Manufacture Plastic Ornaments.

DALLAS, TEX., February 20.—About four months ago the Southern Plastic Co. was organized here, which is located at 733 Elm Street. This company is engaged in the manufacture of building trimmings and architectural ornaments from staff and plaster. These are both for exterior and interior use. This material, or at least these ornaments, are not very extensively known in this country, although they are widely used in many parts of Europe, especially Germany. The firm report a growing demand for their products and find business making steady progress. The popularity of this style of architectural ornaments is growing in favor and the prediction is made that plastic ornaments will be very largely used in future.

Installed New Machinery.

WARREN, OHIO, February 10.—The annual business meeting of the Elastic Pulp Plaster Co. was held recently at which the directors and officers were elected. The officers are: John Pew, president; Ed Nicholson, vice president; H. S. Pew, secretary and treasurer; F. C. Pew, assistant secretary and treasurer. The past year's business

was very satisfactory in every way. The company has just installed one of the Ruggles-Coles Engineering Co.'s sand dryers and is now engaged in the manufacture of all kinds of hard wall plaster. This organization has also entered the builders' supply business, and they expect to do a very large business during the present year.

Fire Destroys Stucco Retarder Plant.

UHRICHVILLE, OHIO, February 23.—The large plant of the Binns Stucco Retarder Co., in this city, was completely destroyed by fire last night. The loss is estimated at \$15,000.00, with no insurance. The fire was discovered about 6:15 o'clock by some children, and the alarm was immediately given. All the available apparatus possible was brought into play, but it was insufficient to save any part of the plant. It is supposed to have started by a red hot nail becoming caught in the boiler.

The picture herewith produced was taken on the day after the fire by a representative of Rock Products and gives a vivid view of the ruins. Mr. D. E. Binns says that he will rebuild just as soon as a site can be secured. A large amount of stock was on hand and considerable new machinery had just been purchased, which had not been installed. All of this was destroyed. Orders are being filled from the company's plant at Webster City, Iowa.

The Colorado Portland Cement Co., of Portland, Col., is preparing to construct a large gypsum plant at Eagle.

The Rochester Pulp Plaster Co., of Rochester, N. Y., incorporated with a capital of \$35,000.00. The directors are: Albert J. L. McKechnie, Frank E. Taft and George Heermans.

J. M. Black, of the Fairmount Wall Plaster Co., Fairmount, W. Va., says he has been improving his slack time recently in enlarging their plant to take care of a big trade for 1905.

The plant of the Montana Aluminum Plaster Co., at Armington, Montana, was destroyed by fire January 9. The loss is estimated at \$12,000.00, partially covered by \$7,000.00 insurance.

A fibre wall plaster plant is under way at Nashville, Tenn. L. S. Jackman, of California, Pa., and John H. DeWitt are pushing the project. It is proposed to establish a plant costing \$30,000.00.

Charles W. Brace, of Manhattan, N. Y., who manufactures plaster, has purchased property at the corner of Harris Avenue and Prospect Street, Long Island, N. Y., and will erect a factory for his product and remove his plant.

The American Hard Wall Plaster Co. has been incorporated at Utica, N. Y., with the following officers: T. R. Proctor, president; Joseph R. Swan, vice president; F. G. Weaver, treasurer; J. L. Hughes, secretary; J. E. Coon, manager.

Through the courtesy of Charles Root, treasurer and general manager of the Consolidated Wheatland Plaster Co., of Wheatland, N. Y., the handsome calendar of that company has been received at this office, where it now occupies a conspicuous place.



BINNS STUCCO RETARDER CO., UHRICHVILLE, OHIO, THE DAY AFTER THE FIRE.

Calcining Gypsum in France.

G. P. Grimsley, in his report upon gypsum, in volume IX of the Michigan State Geological Survey, compiled by State Geologist Alfred C. Lane, gives some interesting information regarding the methods of calcining gypsum in France. In substance, he writes as follows:

There is a marked contrast in the methods of burning gypsum in France and the United States. Most of the American rock is calcined in kettles by direct heat, and even where rotary cylindrical kilns are used, the heat is direct. The French plaster manufacturers have invented a variety of kilns and methods which are held in high favor by the companies using them.

One of the common types of kiln is described as a much simpler arrangement than the American kettle and would seem to represent a more crude method. A series of arches are constructed out of gypsum blocks and supported on piers of the same material. These arches are about one foot eight inches wide and two feet four inches high. On these are placed large blocks of gypsum, then smaller and smaller blocks until the kiln is filled to a height of about thirteen feet. The whole kiln is covered by a shed roof and spaces are left between the blocks to give a draft. The arches are filled with wood and a hot fire maintained until the lower blocks begin to grow red hot, which requires about ten hours. Then a slow fire is kept for ten or twelve hours. The lower rock over the arches is overturned and the upper rock underburned, but a mixture of the whole gives a fairly uniform plaster. Such a kiln holds 70 to 75 tons of rock, and the plaster is removed in from two to three days. It requires 1,200 fagots of wood which now cost 40 cents a hundred. Many kilns now use part coal in the form of briquettes.

The kiln just described is used more commonly than any other, but a number of plaster works are now using improved kilns where the heat is usually indirect. The Brisson kiln used at Pantin is analogous to a gas furnace in construction. It has eight retorts, each holding six hectoliters of gypsum, heated by a single fire, attended by a single workman and yielding a very white plaster. The plaster made in the rough kilns previously described is usually gray. For a long time any process making white plaster was looked upon with suspicion in France, as the gray plaster was considered superior in quality.

Another variety of kiln held in high favor in France is the Dumesnil kiln. This has a central fire pit with a fire chamber above, which is connected with radiating flues constructed of the larger fragments of the gypsum rock. Above these flues the stone is arranged in layers, containing smaller and still smaller fragments toward the top. In the arch forming the top of the kiln are flues controlled by dampers. The gypsum is charged through an opening in the rock and removed through a door at the side. The kiln is 20 feet in diameter and 13 feet in height to the top of the arch. It will hold 1,200 cubic feet and is burned in twelve hours with a fire of fagots, and in a little less time with coal. The method is said to be economical and the plaster uniform in quality.

In the Hartz Mountain district of Germany the gypsum is ground on mill stones. The plaster is calcined in iron kettles set in masonry and the material is kept in motion by revolving stirrers. At Osterode one mill uses a round iron vessel as a muffle kiln for burning the plaster.

In Ellrich and Walkenried some double shaft ovens 13 feet high and 5 feet in diameter are used. The fuel and gypsum are placed in these shafts in alternate layers and covered with a shed roof. As soon as the plaster is completely calcined it is drawn out from below and more material added to the top.

In some of the primitive mills the rock is broken in stamp mills. The stamps are made of maple or oak with an iron shoe at the bottom giving a length of over nine feet. These fall in a trough of wood with an iron grate bottom. It is ground finer in a roller machine in which heavy rollers move over a pan somewhat like an American drypan brick machine. In some mills a jaw crusher is used not unlike the type employed in the Michigan mills, and the fine grinding is there accomplished by means of mill stones.

Sand.

The Sand Formations of Oklahoma.

In Oklahoma the sand regions are quite widely distributed. All sand, except a very limited quantity in the Wichita Mountains, is transported. There are two classes of these transported sands. The one is composed of the wash from the Rocky Mountains and the tertiary of the plains; the other class includes those which were transported during the Paleozoic ages and deposited in lakes or seas and there consolidated. These have since been elevated, the covering removed, and the cementing material dissolved. As a result, the sand now lies loose in place.

This first class of sand constitutes the beds and adjoining flood plains of all the rivers except the Washita. These sand plains vary in width from a few hundred yards to several miles. They are the result of the overloaded condition of the streams. The sand regions are most extensive along the north side of all rivers except the north fork of Red. In this the sand occupies the south side. The sand is fine grained, pink in color, and quite free from alluvium or clay material. The grains are very fine and well rounded. Under the microscope, it is seen to be composed almost entirely of quartz grains. Some of the grains seem to be coated with limonite. This sand finds little commercial use. It is considered too fine and round for construction purposes. It is well adapted for engine sand, but to the writer's knowledge, no such use is made of it. Recently the Department of Geology of the University of Oklahoma, has had some sand-lime bricks made from this sand and find the product to be a very fine appearing brick.

The second class of sand, derived from sandstone, though still in place, occurs in beds extending, in general, north and south, and coinciding with the strike of the beds. The most extensive deposit of this kind is in the eastern part of the territory. Other beds occur at intervals farther west—thus crossing the beds mentioned above at nearly right angles, forming what Prof. Gould calls the checkerboard arrangement. In these deposits, the sand grains are coarser and more angular than in the first class, but still quite fine and rounded. The sandstone in place is quite ferruginous, hence the grains are coated with oxide of iron, giving the sand a brown or red appearance. These sands are used locally to some extent.

Oklahoma is supplied with an abundance of good sand, chiefly quartz, to which the only objection that can be offered is the fineness and smoothness of the grains. However, with gypsum in abundance and a number of cement works already in operation, together with the possibilities of sand-lime brick, and oil and gas for Portland cement manufacture; Oklahoma can produce not only sufficient material for her own constructional works, but can contribute considerable to the general market.

The Perryville Gravel and Ballast Co., of Decatur County, Tenn., has been organized at Nashville. The capital stock is \$12,000.00.

Improvements for the Present Year.

CHILSON, MICH., January 12.—The Toledo Stone, Sand and Gravel Co. write us: "Our plant is devoted to the washing, screening and loading of gravel, and is the only plant of the kind in Michigan. Our output in 1904 was 500 cars screened gravel, a product for concrete work. We have at present screens that make six distinct grades of washed sand and gravel. For 1905 we are enlarging our plant to double its present capacity. In 1904 we run our plant with gasoline power, but not finding it profitable we are now installing a steam shovel and a 50 h. p. steam plant and stone crusher for making crushed granite."

The Richardson Sand Co., of Elgin, Ill., has been incorporated with a capital stock of \$7,500.00. The incorporators are: F. M. Richardson, C. S. Ross and J. P. Mann.

The Rochester Sand Co. has been incorporated at Rochester, N. Y. The capital stock is \$1,500.00, of which \$8,000.00 has been paid in. The company will buy and lease land for mining sand and gravel. Charles E. Woodward, Alice C. M. Woodward and Joseph E. Summerhays are the directors.

The Builders' Sand Co., of Kansas City, Mo., has been incorporated with a capital stock of \$50,000.00. The incorporators are: Joseph E. Halpin, Henry J. Massman, Walter J. Kennedy and Owen Frankenfield.

The Lorain Sand and Gravel Co., of Lorain, Ohio, has been incorporated with a capital stock of \$60,000.00. G. A. Resek, Charles Ferguson, Mathew Alten, H. Y. Baxter and others are the incorporators. A steam shovel and other improvements will be installed, and operations will soon begin. The company may later manufacture brick and plaster.

The Toledo Glass Sand Co., of Silica, Ohio, recently closed its plant in order to make a number of extensive improvements. Operations will begin about April 1.

A Progressive Sand Concern.

As an evidence of the progressiveness of one of our sand and gravel concerns we herewith reproduce a view of their boat "Nugent," which was built to order at a cost of \$20,000.00.

W. F. Nugent & Bros., while comparatively new in the river sand and gravel business, have made a name for themselves and built up a large business. This boat, which is used exclusively in handling their barges of river sand, is 124 feet long, 24 feet wide and 4 feet deep. It is equipped with all the modern improvements and is complete in every detail. A dynamo furnishes power for ninety incandescent lights, two 2,000 c. p. arc lights and a 6,000 c. p. search light. It has fore and aft cabin and twelve state rooms.

The company has other notable improvements under way and are preparing to do the largest business in sand and gravel ever done in this section.

The Ottumwa Cut Stone Co., Ottumwa, Iowa, has recently finished a fine new plant, putting in air, pneumatic tools, travelers and all modern facilities.

The Philadelphia Quartz Co., of Chester, Pa., will make extensive improvements in its plant. It is quite large and gives employment to many men.

The Clinton Sand and Gravel Co., of Clinton, Iowa, has just been organized with a capital stock of \$10,000.00. The company will buy, sell and acquire sand, gravel and etc. The officers are: J. L. Duley, president; L. Lamb, vice president; E. A. Schultz, secretary, and Herbert Smith, treasurer.

The Aetna Sand and Gravel Co., of Chicago, Ill., are contemplating some notable improvements in their plant.

The Empire Sand Co., of Rochester, N. Y., has been organized with a capital stock of \$50,000.00. The directors are: Theodore Dimon, Howard M. Van Demark and Willis R. Van Demark, all of New York.

The Central Sand Co., of Kansas City, Mo., has been incorporated by F. W. Crabtree, A. H. Hoge, T. S. Bellamy and others, with a capital stock of \$5,600.00.

The Michigan Lake Sand Co., of St. Joseph and Benton Harbor, Mich., has been incorporated with a capital stock of \$15,000.00.

The Maryland Sand and Gravel Co., Trenton, N. J., has been incorporated. The capital stock is \$20,000.00. Henry Y. Brady, Charles S. Swegert and J. L. Conard are the incorporators.

The Cape May Sand Co., Cape May, N. J., has been incorporated with a capital stock of \$25,000.00. The incorporators are: J. H. Edmunds, W. S. Van Zant and F. Entrikin, all of Cape May. The company will deal in sand, etc.

The Glantoun Stone and Glass Sand Co., of Toledo, Ohio, has been incorporated with a capital stock of \$150,000.00. The incorporators are: John H. Service, W. C. Goyhart, W. W. Edison, A. S. Close, C. C. Mininger and N. P. Glann.

Wm. Jutte of New Orleans, La., has just purchased a large interest in the firms of the New Orleans Sand and Gravel Co., and J. H. Gardner, for the purpose of increasing the sand business in that locality. The capital will be materially increased and business done on a large scale.

SAND.

Gold Medal for Salt.

BUFFALO, N. Y., February 18.—The New York and Pennsylvania division of the Colonial Salt Co., under the management of H. C. Elwood, with offices at Buffalo, N. Y., has just closed the first twelve months of active operation and report a very satisfactory business on strictly high grade salts, particularly among the butter and cheese manufacturers. The selling and shipping of vast quantities of salt from the plant of the Colonial Salt Co., Akron, Ohio, into New York State, speaks well for the product, as the quality of the salt manufactured in New York State has always been of the best. This company received the only gold medal awarded on salt by the Louisiana Purchase Exposition, at St. Louis, in 1904, and that is only one of the many compliments they have received from satisfied purchasers of their product. Orders already booked, assure them a good business for 1905.

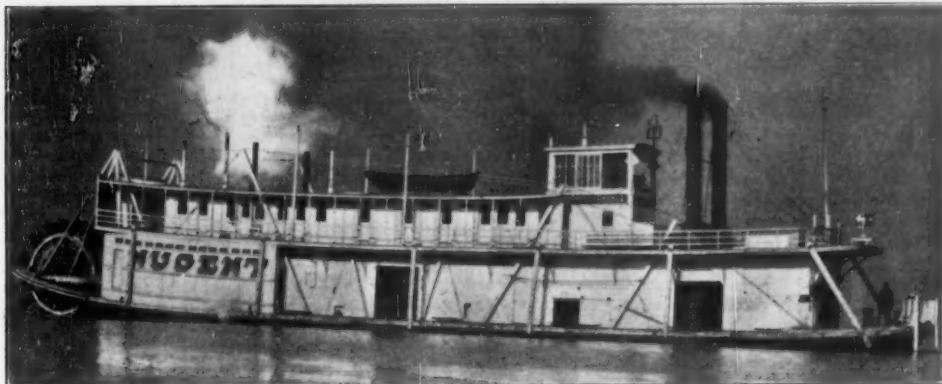
The Empire State Salt Co., of LeRoy, N. Y., has been reorganized and will be hereafter known as the LeRoy Salt Co. The directors are: Jacob C. Dodd, Fred Klinck, Nathan Wolf and Isaac Well, of Buffalo, and C. F. Prentice, J. P. Samson and J. S. Carr, of LeRoy. The company is capitalized at \$100,000.00.

The Daimond Crystal Salt Co., of St. Clair, Mich., has increased its capital stock from \$75,000.00 to \$225,000.00, all of which is subscribed for by the stockholders.

ASPHALT.

The American Asphalt Co., of Oklahoma City, O. T., was organized recently with a capital stock of nearly twenty million dollars. The company will develop 30,000 acres of land in Oklahoma and Indian Territory. The officers are: A. D. Bellamy, president, Florence, Ala.; A. T. Hamilton, vice president and general manager, Oklahoma City; C. W. Brown, second vice president, Comanche, I. T.; W. O. Richards, secretary and treasurer, Oklahoma City; Harper Hamilton, general council, Oklahoma City; A. J. Carlisle, fiscal agent, San Antonio, Tex. They will likely erect a large refinery.

A valuable find of liquid asphalt has been discovered near Hugo, I. T. It is probable a company will be organized to operate same.



W. F. NUGENT & BROTHERS' NEW SAND AND GRAVEL BOAT.

Side Talk.

An Effective Scotch Planing Machine.

Messrs. George Anderson & Co., 420 Ogden St., Newark, N. J., are more generally known to the stone trade by their diamond saw, but they have a full line of stone working machines, one of them being their sandstone planer. It is most solidly built, of trim and taking appearance. The stone is held in a traveling and revolving vise, and by means of an adjusting screw the block can be planed on the three sides successively at one setting, the presentation of each face to the tools being the work of a few turns of the adjuster. The tools used are different from our American tools, which are broad, while the Anderson's are three cornered, and they sharpen themselves on the return run and last much longer than the broad knife. A most interesting and advantageous feature is the fact that the cut operates in both directions; the tool arm cants and presents an independent bank of knives to the stone when both going and coming, so no time is lost. There was a machine in the shop set up and belted, and when the foreman turned on the power the big tool holding arm, weighing a ton, swung backwards and forwards noiselessly and gently, being automatically controlled by a small air compressor, which checked its swing with absolutely no shock or rebound. Mr. Grice claims for it that it does twice the work of the ordinary planer. It is specially built for sandstone work, and a very large one is now being installed for the Ohio Quarries Co. at their quarries and mills at Amherst, Ohio. Mr. Grice is hearing most encouragingly from all quarters concerning their diamond saw.

Laurel Line Tunnel.

The Lackawanna, Wyoming and Wilkesbarre Electric Road—commonly known as the Laurel Line—will, in the course of a few months, cut down the running distance between South Scranton and Scranton by about two and a half miles. This saving will be effected by means of a tunnel now being driven. The purpose is to do away with the graded circuitous route necessary on account of a steep hill, around which the railroad must at present run. Rianhard & Dennis are the contractors in charge of the work, and they have shown considerable foresight in the preliminary arrangements, and also in the plant equipment. As a result they are now reaping the benefit of a carefully laid out scheme of operation.

The method of driving the tunnel is, roughly, as follows: The power house which was erected especially for the job, is equipped with two 20 x 30 in. and one 16 x 24 in. Rand straight-line air compressors. These three machines discharge air into a 6 ft. by 14 in. receiver, from which it is led through an 8 in. pipe to the highest elevation on the hill, directly over the proposed tunnel. At this point a shaft is sunk, and the air line tapped so that compressed air may be furnished at the bottom of the shaft to ten "D" Model 5, 3½ in. Rand little giant rock drills, five driving the tunnel in one direction and five in the opposite.

From this same point on the hill, air is conducted through a 6 in. pipe to a second shaft where the supply is again tapped in order to furnish air power to ten more little giants which are operated in the same manner as the first group. From this station the compressed air continues through the 4 in. pipe, and having been transmitted for 6,000 ft. to the other extremity of the tunnel, it is again delivered into a second air receiver, measuring 3 ft. x 10 in. The water, due to condensation, collects in this receiver and may be discharged before the air is led to a 500 ft. Rand re-heater.

After being reheated the compressed air is employed to operate five Rand little giant drills which drive toward the second shaft. At the power house, also, five drills are used to run a tunnel toward the first shaft. It will be seen, therefore, from the above description, that the system is operated from six distinct headings described over a linear mile; the employment of an after-cooler and a re-heater at proper points of the line obviates the difficulties due to freezing and to uneven pressures which are always accompanied by low efficiencies.

Sturtevant Sampling Outfit.

The two machines described herewith are a valuable addition to the now complete line of Sturtevant machinery. The laboratory fine crusher is built on the same lines as the large and well known crushers of this type, with the exception of its special adaptability to cleaning. The machine is built in two sizes, with jaw openings 2x4 in. and 2x6 in. The one illustrated is 2x6 in. size, which weighs about 600 pounds, has a capacity from 250 to 600 pounds per hour, crushing to sand size without screens. The front head and stationary jaw may be easily and quickly removed when both crushing surfaces are exposed for perfect cleaning after each sample. The jaws and shields are of manganese steel, the toggles of bronze, working in tool steel seats, in fact every part is made of the best material to produce a first class machine. It is built for especially fine work and will crush the hardest ores to ¼ in. and finer without clogging.

These machines have met with remarkable success, and there are now hundreds in use among the mines, mining schools and assay laboratories. The 2x4 crusher may be run by hand or power if desired.

The special sample grinder will take the product from these crushers, or reduce hard or soft ore crushed to ¼ in. and finer to 200 mesh, without screens. It is also adjustable for coarser work by simply turning the hand wheel. It produces a very even product to any fineness desired, no screens being used.

It seems as if the bucking board would soon be a thing of the past, except for very small lots of ore. This sample grinder is even more accessible than the crusher, as its grinding discs are swung open like a door which makes it unusually accessible for quick cleaning and replacing of the discs or plates which are the only wearing parts.

Full particulars may be obtained by addressing the Sturtevant Mill Co., Boston, Mass.

Dryers with a Guarantee.

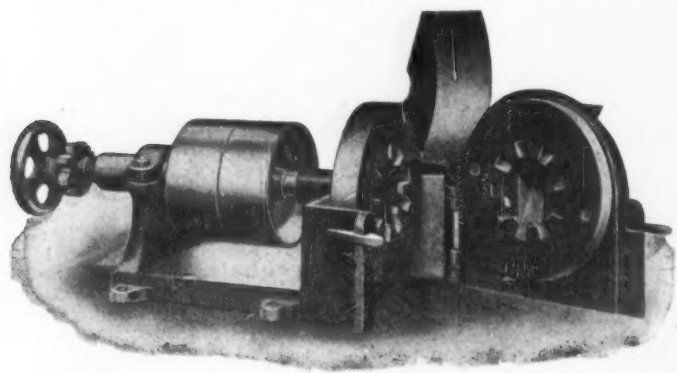
The American Process Co., 62 William Street, New York City, report that during the past month they have received so many orders for their direct heat rotary blast dryers that they have difficulty in making sufficiently prompt deliveries to please their customers. Machines have been sold for drying phosphate rock, plaster, gypsum, sand, tankage, etc. The attractive features of these dryers are simplicity of construction, so that the dust and sand do not effect the exposed parts, causing them to wear out quickly. They also guarantee great economy in fuel and a minimum amount of labor as the operation is automatic.

W. A. Jones Foundry and Machinery Co., manufacturers of conveying, hoisting and a number of other classes of machinery, say that business is good with them. This is quite evident as the ground is broken for an addition to their factory, they are going to erect a brick building 75x173 ft., which will be completed May 1, 1905. Among new machinery which will be installed is a traveling crane.

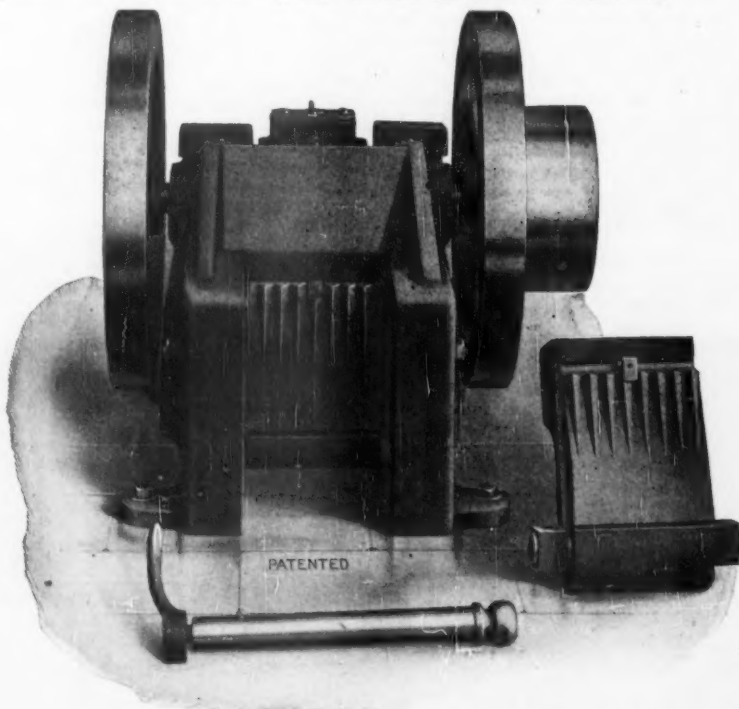
The Biles Drier Co. has been incorporated in Kentucky with headquarters in Louisville, by Mr. J. W. Biles, who established the J. W. Biles Co., of Cincinnati, about twenty years ago, and organized The Turney Drier Co., about six years ago. Mr. Biles has invented entirely new and superior machinery in the way of direct heat and steam driers and filter and roller presses for drying distillery and brewery slop and all feed and food materials, also fertilizers, cement materials, coal, sand and numerous other minerals.

There has recently been sent us a copy of "Protection, Resistance, Durability," a handsome and interesting booklet, describing the methods of manufacture in the electric furnace and use of Acheson graphite for paint pigments. Any one interested in protection metal surfaces from corrosion and decay would do well to write for this booklet to the International Acheson Graphite Co., Niagara Falls, New York.

Mr. J. H. Van Glahn, of Toledo, Ohio, has accepted a position with the Clyde Iron Works, of Duluth, Minn. He will represent the Clyde people in the middle West, South and East in their hydrating lime department. Mr. Van Glahn will make a valuable acquisition to the selling department, as he has had large experience in the construction and operating of hydrating plants. We predict for him good success in this line.



STURTEVANT'S SAMPLE GRINDER.



STURTEVANT'S LABORATORY ROLL JAW CRUSHER.

"Cheaper Hydration."

Mr. Charles C. Kreitzer, the well known apostle for the hydration of lime, of the Clyde Iron Works, Duluth, Minn., has sent us a little book of which he is the author.

Now Mr. Kreitzer declares that he is no writer and does not stand on his talent as a composer, but his book which is entitled "Cheaper Hydration," is extremely interesting to the manufacturer of lime, whether he has ever thought much of the subject of hydration or not. There are no flowers in this composition, but lucidly and clearly he tells the whole story of hydrated lime, from the crusher to the hydrating machine, through the screen or air separator, and finally into the barrel or bag in the shape for marketing the product. It is brief, and yet full of every detail, and embellished and elucidated profusely with excellent illustrations, so that when you have perused the book and conned the pictures well, the reader is sure to imagine that he has seen a batch of 4,000 pounds of lime perfectly hydrated and made ready for the market.

All those parties who want a world of information on this interesting subject, in fact, a complete little text book, embodying all the points, would do well to write to the Clyde Iron Works for a copy. It would be cheap at any price, but possibly may be had for the asking.

This little book answers more questions which the lime manufacturer is making himself, and other people as well, than anything we have ever seen upon the subject. In fact, it is a comprehensive essay on the subject of the hydration of lime, such as has never been presented before.

The Stone Working and Machinery Co., 41-43 Wall Street, New York, call attention in our advertising department to the Thompson patent parallel motion gang and rip stone saw, and they claim that it is the most economical, practical and rapid stone saw ever yet produced; the principle of mechanism is the simplest known arrangement, and adapted to every requirement of straight stone sawing.

They have a large number of testimonials from prominent firms and other experts and practical stone contractors, who have tested the machine and comment upon it in the highest terms, and considering the first cost, the cost of repairs, the power required, the speed and the quality of the sawing, this saw has no equal. Write the manufacturers for their illustrated pamphlet.

The Garry Iron and Steel Co., Cleveland, Ohio, have discontinued their engineering department, and are giving their entire efforts to the roofing, tin plate and mortar color business, and are in excellent shape to ship promptly orders for genuine charcoal, iron black and galvanized sheets. They are also having a very large trade on their Trinidad Lake Asphalt prepared roofings.

E. W. Seamans, 25 Fountain Street, Grand Rapids, Mich., recently received the following testimonial with regard to his sand and cement brick machine:

"Dear Sir—Your machine does all and more than you ever claimed for it, and we are very much pleased with it. Three men made 140 perfect brick in ten minutes, and two men have made 2,500 brick in a day. We keep two men working all the time, and are selling the bricks faster than we can make them. [Signed] SHORE & RAMSEY, Evart, Mich."

Mr. Seamans has a number of other testimonials equally as pertinent as this, which we will be glad to furnish to parties interested in the subject of the manufacture of brick, either by the use of cement or lime for a bonding material.

Mr. Seamans reports that every machine that he has installed has given perfect satisfaction to the purchaser, because they are money makers.

Hardsoeg Wonder Drill Co., Ottumwa, Iowa, have taken possession of their new plant which is perfectly equipped for the manufacture of the "Little Wonder Air Hammer Rock Drill." They recently received an order for fifty of these machines, to be shipped to Johannesburg, South Africa, and the party purchasing these already has a number of the little drills in use in the mines out there. There are some sixteen mines in the Cripple Creek district alone using the "Little Wonder."

The Austin Manufacturing Co., with offices in Chicago, St. Louis, New York and Atlanta, as well as agencies in many prominent points, say that the stone crushing business in Ohio looks very bright,

and the Austin seems to be considerably in evidence.

The following crushing plants have been placed in that state since January 1, through their selling agents: The Williams Contractors Supply Co., 807 Brunson Building, Columbus, Ohio. A complete crushing plant, consisting of a No. 8 and No. 4 Austin crusher, with elevators, screens, hoists, engine and boiler; The Central Ohio Lime and Stone Co., Marion, Ohio, a No. 6 and No. 3 plant complete; The Castalia Stone Co., Castalia, Ohio, a No. 8 plant complete; The Spence Bros., of Cleveland, Ohio, a No. 5 plant complete; The Urschel Lime Co., Sugar Ridge, Ohio, a No. 5 plant.

The Allis-Chalmers Co., Chicago, Ill., through their Department of Publicity at Milwaukee, Wis., have issued their catalogue No. 120, devoted to Reynolds Corliss engines, containing many carefully calculated tables, suggestions and descriptions of the improved mechanical devices, late inventions which represent the highest type of development for motive power. The illustrations contained in this catalogue are superb, and it seems that every character of engine, both in vertical and horizontal, simple and compound, has been treated with the highest order of intelligence, and is well worthy of the consideration of every man who uses motive power of any description.

The Chicago Portland Cement Co., Chicago, Ill., has sent out an artistic New Year's greeting to their friends and patrons. This is artistically designed, and done in green and gold, while the trademark of the company is done in blue and gold, and inside are several very handsome engravings of concrete bridge construction, which is made of the A A brand exclusively, one of which is the reinforced bridge at Kankakee, Ill., showing a long line of street cars reaching across the bridge with thousands of people and vehicles crowding it, constituting at once the limit of test to which it can ever be subjected in the way of human life and traffic. Needless to say, that it makes a very pretty picture, with the seven great arches of the bridge supporting the multitude.

J. B. Molyneux & Co., Cleveland, Ohio, manufacturers of galvanized corrugated wall ties, say that the testimony of the many users of their product is universally to the effect that they give perfect satisfaction for the purposes intended. Their wall ties are cut from tough galvanized steel, are very strong and sufficiently pliable, and conform to any irregularity in the wall. They can be used either in solid wall, or to fasten a veneer course to studding, the metal being very pliable, can be bent to any angle, and an ordinary wire nail drives through easily without punching, no hooks or staples are required.

The C. O. Bartlett & Snow Co., Cleveland, Ohio, have just issued their general catalogue No. 15. It is indeed a worthy exponent of this enterprising firm, and contains a large amount of valuable information to mill operators in their line of manufacture.

The Garry Iron and Steel Co., at Cleveland, expect in 1905 to give more personal attention to the roofing business and, therefore, will be in position to take care of a larger trade. Their stock will be heavier and prompt service will be their watchword. Mr. C. S. Bigsbee, who has recently been elected general manager of this company, has a large list of acquaintances and will appreciate more fully their orders, and Mr. Bigsbee knows how to give them his best care. This company also manufacture pneumatic and hand power cranes and are specialists on dry mortar colors.

The Ricketson Mineral Paint Works, Milwaukee, Wis., received the highest award at the World's Fair in St. Louis, for the excellence of their dry mortar colors as exhibited there. This concern are pioneers in the manufacture of mineral colors and have been known as the makers of colors of high quality, strength and durability, which have been used successfully for many years in coloring mortar, cement, building block and bricks. The success of their colors is said to lie in the fact that they run very high in iron and consequently will not fade, for iron is a very essential ingredient in order to withstand the tests it is put to in lime or cement or in coloring brick or stone. They are in possession of a large number of testimonials bearing upon the subject of the perfect satisfaction which hundreds of users have made.

INFORMATION BUREAU.

883.—Stone crushing concerns who produce crushed quartz as fine as washed river sand, please send their address at once to the editor of Rock Products to refer to parties inquiring for such material.

Wanted and For Sale

One insertion, 25c a line; Two insertions, 50c a line; Three consecutive insertions with no change in the composition, 56c a line. Count eight words to a line; add two lines for a head.

WANTED—HELP.

COMPETENT MAN to manage a sand lime brick plant. Must understand the running and care of machinery and management of men. Applicant to state experience and salary required. A permanent position and interest in the business will be given to the right man. Address THE BRANDON BRICK AND LUMBER CO., Ltd., Brandon, Man., Can.

MAN—Experienced in burning lime. Address W. L. MOOR, Tallahassee, Fla.

SALESMAN for the best brass lined cement stone machine on the market. Contractors Machinery Co. Address SUPERIOR MFG. CO., Minneapolis, Minn.

SALESMEN—Building material salesmen in Ohio, Illinois and Kentucky to handle well known brands of wall plaster as side line. Liberal commissions. Address BOX 77, care Rock Products.

SALESMEN—We want good salesmen all over the South for the Winget building block machine. Address A. D. MACKAY & CO., Chamber of Commerce, Chicago, Ill.

SUPERINTENDENT for a rock crushing plant in Southeastern Indiana. Must understand machinery and economical handling of men. State experience and salary desired. Address CRUSHER, care Rock Products.

THOROUGHLY EXPERIENCED MAN capable of operating on his own responsibility a stone-cutting plant now connected with a large white marble quarry. An opportunity for a good stone cutting firm to get the advantages of having their own supply without any investment. Owner would operate quarry and deliver stock at bottom prices; have large orders booked now, and could supply plenty of cutting contracts to the right party. LOCATION—Thirty to one hundred miles will reach either Washington, Baltimore, Philadelphia or New York. Plant strictly modern, operated by electricity from my own supply. Marble well known, and accepted in competition with best Vermont and Georgia stock. It will pay responsible parties to investigate. Address MARBLE, care Rock Products.

WANTED—POSITION.

SALESMAN—Experienced and successful, desires position. Can give convincing references. Address P. D., care Rock Products.

FOR SALE—MACHINERY.

AIR COMPRESSOR—One 14 in. by 22 in. Rand straight line steam driven air compressor. Capacity 392 cubic ft. per minute. Will sell the same very cheap to quick buyer. Address F. E. Pfannmueller & Co., 733 The Rookery, Chicago, Illinois.

ENGINES—One Taylor-Beck automatic engine, cylinder 15½ in. by 18 in.; has two band wheels 6 ft. by 14 in.; one plain slide valve engine, cylinder 17 in. by 24 in.; has band wheel 10 ft. by 24 in. Address CRESCENT PORTLAND CEMENT CO., Wampum, Pa.

POLISHING MACHINE—One Noble wire rip saw Lane polishing machine. Address **PITTSBURG CRUSHED STEEL CO.**, 61st and A. V. Railroad, Pittsburg, Pa.

SEVERAL second-hand Pulsometer pumps, boilers, engines and miscellaneous machinery. Address **MASLINS**, 165 First Street, Jersey City, N. J.

VICTOR STEAM SHOVEL—Yard and one-half dipper; 45 h. p. boiler; shovel has been used but seven months. As we have no use for steam shovel, will sell cheap. Address **VICTOR**, care **Rock Products**.

BUSINESS OPPORTUNITIES.

MONUMENTAL BUSINESS—A clean, modern stock of monuments, tablets and markers, mostly granite. An old established business in a city of six thousand in a rich country. Value of stock about \$4,500.00. A good opportunity for some one. Reason for selling, poor health. Address **H. H. DOWDEN & SON**, Greensburg, Ind.

ONE-HALF INTEREST—Needing additional working capital, will sell to satisfactory party one-half interest in our company. Want especially a party who can take an active part at liberal salary. We own the only Wet Process for hydrating lime. Address **NATIONAL NEW PROCESS LIME CO.**, 39 Cortlandt Street, New York City.

SAND in unlimited quantities; on the railroad near here. Will sell cheap or join to develop. Address **IKE A. CHASE**, Memphis, Tenn.

WANTED—MISCELLANEOUS.

ACTIVE INTEREST in an established quarry business. Address **W. B.**, care **Rock Products**.

SPECIAL NOTICE—H. S. Palmer's licensees are respectfully requested to report such damages as they may have sustained by reason of infringers or derogatory statements regarding the H. S. Palmer patents to this office without delay. Address **HARMON S. PALMER HOLLOW CONCRETE BUILDING BLOCK CO.**, Washington, D. C.

WANTED—MACHINERY.

MACHINERY—Gang saws and other marble working machinery. Must be in first-class condition. State kind of machinery and price. Address **THE SCHILLING CO.**, Albany, N. Y.

PLANER—A good second-hand stone planing machine. Must be in good working order. Write promptly, giving full particulars and price, to **LOCK BOX No. 9**, Mattoon, Ill.

FOR SALE—MISCELLANEOUS.

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CEMENT PROPERTY—Five hundred acres of cement property cheap. Necessary limestone on same tract. Geo. analysis. Shipping facilities good. Address **LOCK BOX 427**, Slatington, Pa.

FOR SALE—PLANT.

CRUSHING PLANT—No. 6 Gates crusher, engine, boiler, drill, carts, cars, track. Complete outfit; all or part. Address **PATERSON CONSTRUCTION CO.**, Ingalls Block, Indianapolis, Ind.

CRUSHING PLANT—Up-to-date stone crushing plant with large railroad contract at above standard prices and good commercial trade; location, close to town of 100,000 population. Good reason for selling. Address **STONE**, care **Rock Products**.

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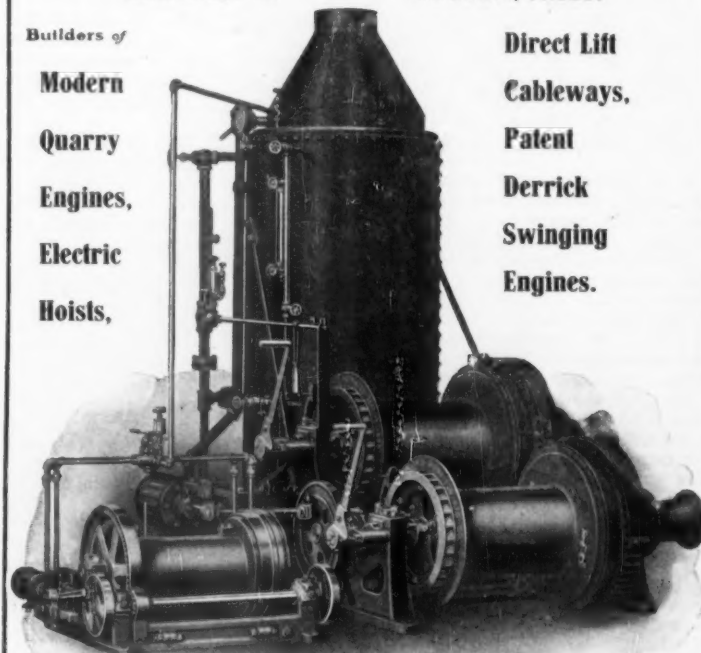
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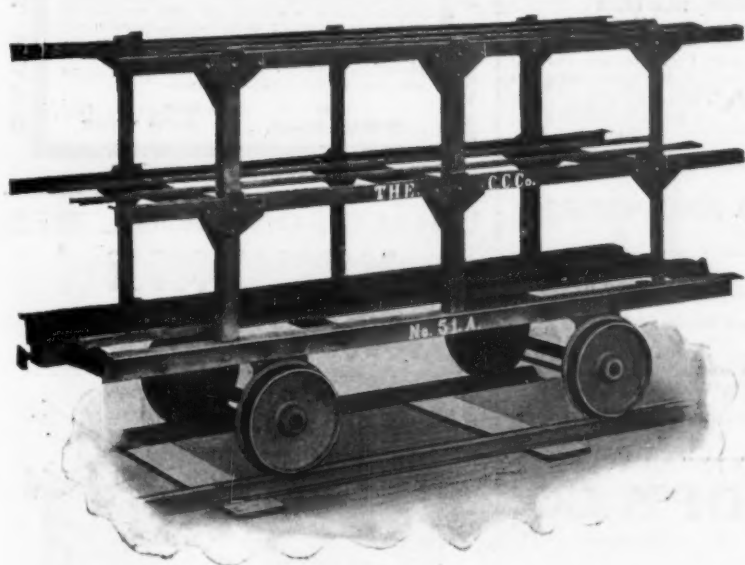
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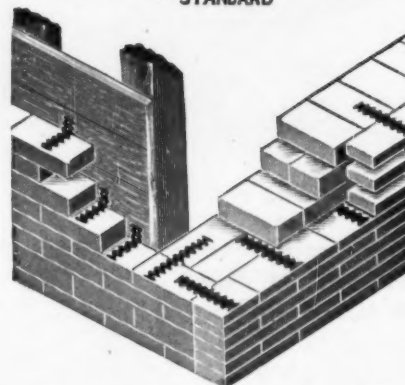
Nash's Expeditious Measurer.

A book containing 200 pages of indexed tables, which show at a glance the cubic contents of any stone according to its length, breadth and depth. Used by stone workers all over the world. Order of your bookseller or address the publisher. 1904 edition printed entirely from new plates. Price, \$2.00 postpaid.

A. L. NASH,
17 State Street, NEW YORK.

AVOID ERRORS.

WHALE BONE WALL TIES



Samples and prices free. The most desirable wall tie on the market.

HOUSTON BROS. CO.,

Everything in Builders Supplies.
Lime, Cement and Sewer Pipe.

3200 Liberty Avenue, PITTSBURG, PA.

If You Want a

CHARTER

Permitting Widest Possible Scope of
Business Operation,
Imposing Only Nominal Obligations

INCORPORATE

Under the Laws of

ARIZONA

Free Information

WALTER G. REESE, Prescott, Ariz.

To Harden and Waterproof Cement Blocks use **"LOCKPORE."** Applied as a first coat on cement or concrete blocks makes the surface impervious to moisture or dampness, and makes the surface extremely hard. Use **"ANHYDROSOL"** a cellulose, waxy material as a second coat, which, applied in liquid form, sheds water or moisture and prevents deterioration.

We solicit correspondence with a view of furnishing more detailed information.

TOCH BROTHERS, ESTABLISHED 1948. **NEW YORK CITY, NEW YORK.**

OFFICE AND WAREHOUSE: 468-472 WEST BROADWAY.

WORKS: LONG ISLAND CITY.

MAKERS OF THE CELEBRATED R. I. W. DAMP RESISTING PAINTS.

TECHNICAL PAINTS.

CHEMISTS.

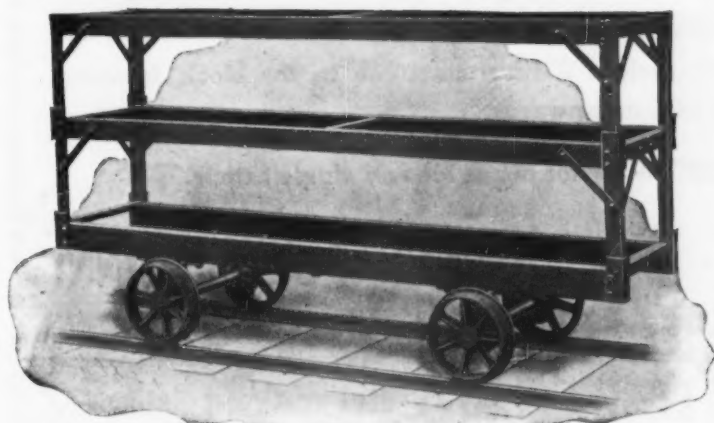
WE BUILD CARS

especially designed for handling sand cement block and brick.

We also build a full line of hand and power presses for sand cement brick.

Also sand lime brick cars, end and side dump cars for sand, clay, stone, lime, concrete, etc.

And narrow gauge cars of all kinds and descriptions for any purpose.



Ohio Ceramic Engineering Co.

50 Wall Street,

CLEVELAND, OHIO.

We Design, Construct and Superintend the Building of

Wall Plaster Plants OR Mills

Of all types and furnish formulae under guarantee of cost.

THE WALLACE ENGINEERING CO.

BOX 99,

CLEVELAND, OHIO.

Cedar Rapids, Iowa, Jan. 18, 1905.

ROCK PRODUCTS,

Francis Publishing Co., Publishers,

431 West Main Street,

LOUISVILLE, KY.

Gentlemen:

The Iowa Marble and Granite Dealers, in convention assembled, tendered a unanimous vote of thanks to ROCK PRODUCTS for the courtesy and co-operation which has been given them by that journal.

Respectfully,

(Signed) C. J. FIELD,

Secretary.

THIS SPACE RESERVED FOR

The Brown-Cochran Co.,
LORAIN, OHIO,

MANUFACTURERS OF

The Brown Gas and Gasoline Engine
Air and Gas Compressors.

WAUSAU RED GRANITE

Famous for its color and brilliancy.
We have the finest stock in this district, either in the rough or finished.

ANDERSON BROS. & JOHNSON

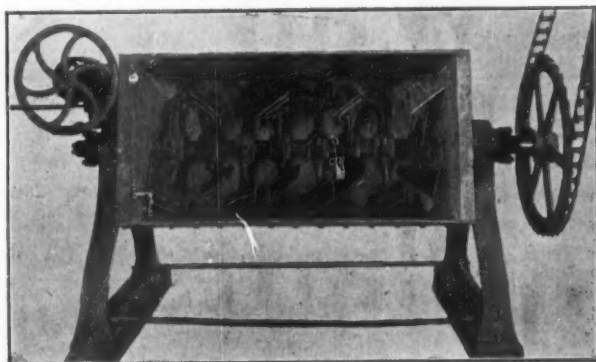
GRANITE HEIGHTS P. O., WIS.

Tell 'em you saw it in ROCK PRODUCTS.

WINNER BLOCK MACHINE CO.

MANUFACTURERS OF

Hollow Block Machines



SHOWING MIXER HALF DUMPED.

**Concrete Mixers, Fence Post
Molds and Sewer Tile Molds.**

Our molds are all copper lined to handle wet material.

Complete outfit for \$1,150.00, consists of one engine, one mixer, two block machines, one fence post mold, and one sewer tile mold. We can start you in the block business for \$30.00 and upwards.

AGENTS WANTED

✉ Write for prices for any single article. ✉

1 and 2 West 29th Street, - - MINNEAPOLIS, MINN.

The Henry Martin Brick Machine
MANUFACTURING CO., Inc.
LANCASTER, PA.

ROCK CRUSHERS.

Fire-BRICK MACHINERY-Paving

CEMENT MIXERS,
ELEVATORS,
WHEEL BARROWS, ETC.

SEND FOR COMPLETE CATALOGUE.

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LIME

For Building, Chemical & Agricultural Purposes

Book of Credit Ratings and Financial Reports

FOR THE GRANITE AND MARBLE TRADE.

New edition just issued. Send for subscription rates. References, any of the Leading Granite Manufacturers.

UNITED MERCANTILE AGENCY,

A. M. HUNT & CO., Proprietors,

131 Devonshire Street, BOSTON, MASS.

THE NEW

Dallett Plug Drill

just out is the tool you have been looking for. Write for description and prices which will interest you, and then—a trial will prove the "Dallett" superiority. Write for new carving tool prices.

THOS. H. DALLETT CO.

York Street and Sedgely Avenue,

PHILADELPHIA, PA.

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THREE OF A KIND

"Very Interesting."

Carleton, Neb., Jan. 12, 1905.
The Francis Publishing Co.,
431 West Main Street,
Louisville, Ky.

Gentlemen:—

Your December number of ROCK PRODUCTS received and found it very interesting. The one article by Pettyjohn Bros. alone has made ROCK PRODUCTS worth the subscription price to me. Enclosed find \$1.00 for which place my name on your list. The concrete hollow block is meeting with almost universal favor here, some good buildings being built out of them and we are preparing for a big run on them the coming season.

Yours truly,

(Signed) J. W. MILLER.

Knows the Best Medium.

Mr. F. S. Culver, Manager of the Ohio Retarder Co., Port Clinton, Ohio, writes us under date of January 15, 1905: "We desire to take a larger space with you than before, with such notices as may be fitting and readable. We have had good returns from the card we carried in your paper and now that we are again running and with five times our old capacity, it behooves us to use the best medium we can find to sell our products."

United States Gypsum Co.

General Offices, 184 LaSalle Street, CHICAGO, ILL.

Manufacturers of WALL PLASTERS Unsanded

Alabaster Cement Plaster.
Big 4 Cement Plaster.
Diamond Cement Plaster.
Duncombe's Cement Plaster.
Flint Cement Plaster.
Granite Cement Plaster.
Ivory Cement Plaster.
Imperial Cement Plaster.
K. & N. Cement Plaster.

O. K. Cement Plaster.
Rock Cement Plaster.
Roman Cement Plaster.
Red, White and Blue Cement Plaster.
Waterloo Cement Plaster.
Zenith Cement Plaster.
Baker Cement Plaster.

Prepared WALL PLASTERS Sanded.

Adamant Wall Plaster.
Big 4 Wall Plaster.
Diamond Wall Plaster.
Granite Wall Plaster.
Ivory Wall Plaster.

Imperial Wall Plaster.
Rock Wall Plaster.
Zenith Wall Plaster.
Baker Wall Plaster.

BRANCH OFFICES: Ft. Dodge, Iowa; New York Life Bldg., Omaha, Neb.; 480 Virginia St., Milwaukee, Wis.; Lumber Exchange, Minneapolis, Minn.; Foot of Tower Ave., West Superior, Wis.; Hammond Bldg., Detroit, Mich.; Indianapolis, Indiana; Sandusky, Ohio.

"Has Never Been Sorry He Joined"

Jackson, Mich., Jan. 27, 1905.
ROCK PRODUCTS,
431 W. Main St.,
Louisville, Ky.

Gentlemen:—

I wish to state in behalf of the company that our advertisement in your paper gives excellent results. We have never been sorry at any time that we took an advertisement in your paper.

Yours respectfully,

THE P. B. MILES MFG. CO.
(Signed) S. J. YOUNG, Adv. Mgr.

12 Months Subscription for \$1.00.

ADVERTISING RATES ON APPLICATION.

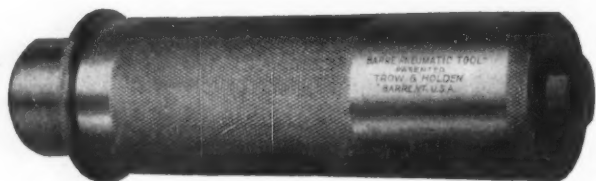
THE FRANCIS PUBLISHING CO.,
PUBLISHERS,

431 W. Main St.,

Louisville, Kentucky.

Tell 'em you saw it in ROCK PRODUCTS.

Barre Pneumatic Tools
FOR GRANITE-MARBLE AND STONE

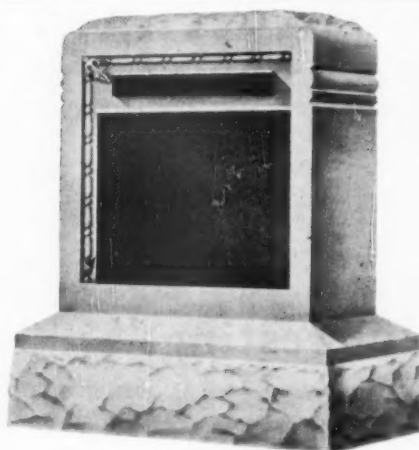


Made in four sizes to meet all requirements for carving, lettering, tracing and finishing any kind of stone. Your plant is not up-to-date without them.

MANUFACTURED BY

TROW & HOLDEN

BARRE, VT.



C. W. McMILLAN & SON 158.

**C. W. McMILLAN
& SON,**

BARRE, VT.



All kinds of
Monumental Work.

Squaring and Polishing
a Specialty.

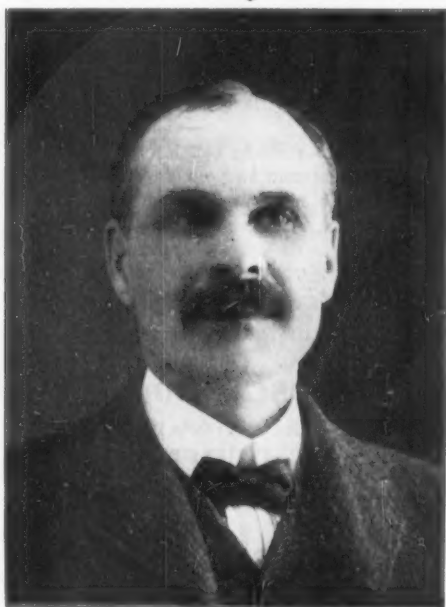
ONE of the biggest
derricks in the
United States, built,
rigged and set up by

MATT HALEY,

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Does business from
Maine to California.



DANIEL H. McLEOD.

Wishing the trade a merry Xmas and a happy New Year, we at the same time ask you for a part of your business during 1905. We will assure you good service, best grade of stock and work produced by any one. You are advised from time to time as to how your work is progressing and if at any time any of your orders are unavoidably delayed, customers are advised of the same. We depend altogether on the retail trade for our business, therefore, we don't hesitate to ask for your patronage. We make no specialty of any part of the business. We consider ourselves capable of handling any kind or class of work. Trusting you will favor us with some of your business which will have our best attention, we remain,

Yours respectfully,
EMSLIE, McLEOD & CO.,
Quarriers and Manufacturers.

Established 1884.

Tell 'em you saw it in ROCK PRODUCTS.

John E. Smith.
Donald Smith.

N. D. Phelps,
Mgr.

John Trow.
H. A. Phelps.

Barre White Granite Co.,

Successors to WHEATON QUARRIES.

White Granite FOR MONUMENTAL WORK,
CURBING AND PAVING.

Write For Quotations.

BARRE, VERMONT.

ROBINS BROTHERS,

MANUFACTURERS
OF ALL KINDS OF

Cemetery Work from Barre Granite

BARRE, VT.

YOUNG BROTHERS, MANUFACTURERS OF

GENERAL MONUMENTAL WORK

From the Best
LIGHT and DARK

Barre Granite

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PEVERLY BROTHERS, Agents,
1216 Filbert Street, PHILADELPHIA.

Granite City Polishing Machine.

Power Hoist with ball bearing,
Rope Buffers and Scroll Wheels,
Air Compressors and Auto-
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hand Engines, Boilers, etc.

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Powder and Dynamite Headache cured in 15
minutes. Cure guaranteed. No drugs, no chem-
icals. Agents wanted. Postal for particulars.

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Established in 1886.

Tools shipped all over the world. Write for prices.

BARRE GRANITE?

Well, that is just what we manu-
facture and if you want it just send
us a sketch of the work you need and
we will gladly furnish you estimates.

J. O. BILODEAU Monumental Work,
BARRE, VT.

Rock Products

One Year, One Dollar



We have no Superiors in the
CARVING AND STATUARY LINE

TRY US.

RIZZI BROS.,

BARRE, VERMONT.



THIS is a view of a
small portion of
our quarry.

All grades of Barre rough
stock furnished to the
limit of transportation.

All the most modern
machinery at both the
quarry and cutting plant.

WE MAKE PROMPT
SHIPMENTS.

We are prepared to
handle anything in the
line of manufactured work
at our cutting plant.

We especially solicit
heavy work and orders
that you are particular
about.

One of the Oldest and
most Reliable Granite
Firms in Barre.

Quarriers and Manufacturers, **WELLS, LAMSON & CO.,** BARRE, VERMONT.

Tell 'em you saw it in ROCK PRODUCTS.

BEST DARK BARRE GRANITE

We Sell **Rough Stock** only

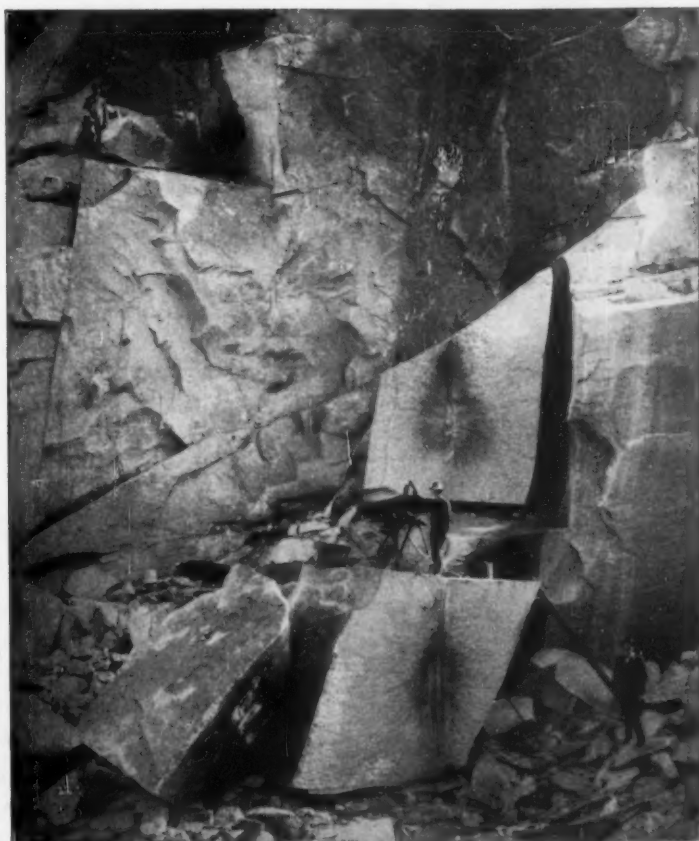


When Placing Orders Specify
that of

Boutwell-Varnum Granite Co.

Quarries at **BARRE**,
Office at **MONTPELIER, VERMONT.**

Tell 'em you saw it in **ROCK PRODUCTS.**



McDonald, Cutler & Co.,

BARRE, VERMONT

Quarry Owners and
Manufacturers of

**Monuments, Mausoleums
and Building Work**

WE CAN FURNISH

**Light and Dark Medium
Granite**

Orders For The Trade Solicited

CARBORUNDUM.

Grans, rubstones, wheels, and all other carborundum products. Carborundum is the most rapid cutting abrasive known.

DAVID MOWAT'S SCOTCH STEEL SHOT.

The secret in making steel shot is the tempering. If it is too soft it will flatten and go to mud, if it is too hard it will roll under the wheels and saws, but if it is tempered right it will cut from the start to the finish. We guarantee Mowat's Scotch Steel Shot to be just right.

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It will buff marble and granite in one-half the time of any other putty powder, is twice the bulk of other putty powders on the market, and requires no more in bulk, consequently goes twice as far.

HAND POLISHERS KIT.

We put up an outfit, including everything necessary to polish granite by hand, and give full instructions how to use the material. Price \$8.00 f. o. b. cars Montpelier.

REVERSIBLE FELT BUFFERS

Are far superior to all other buffers and save two-thirds the time.

Price list and samples on application.

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MONTPELIER, VT.

No. 20 Correction Wynd,
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WOODBURY GRANITE CO.



We make a specialty of rough stock orders and of finished vaults. Try us, we can give you prompt delivery.

Two shades—Woodbury Gray and Hardwick White—the whitest granite known.

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HARDWICK, - - - VERMONT.

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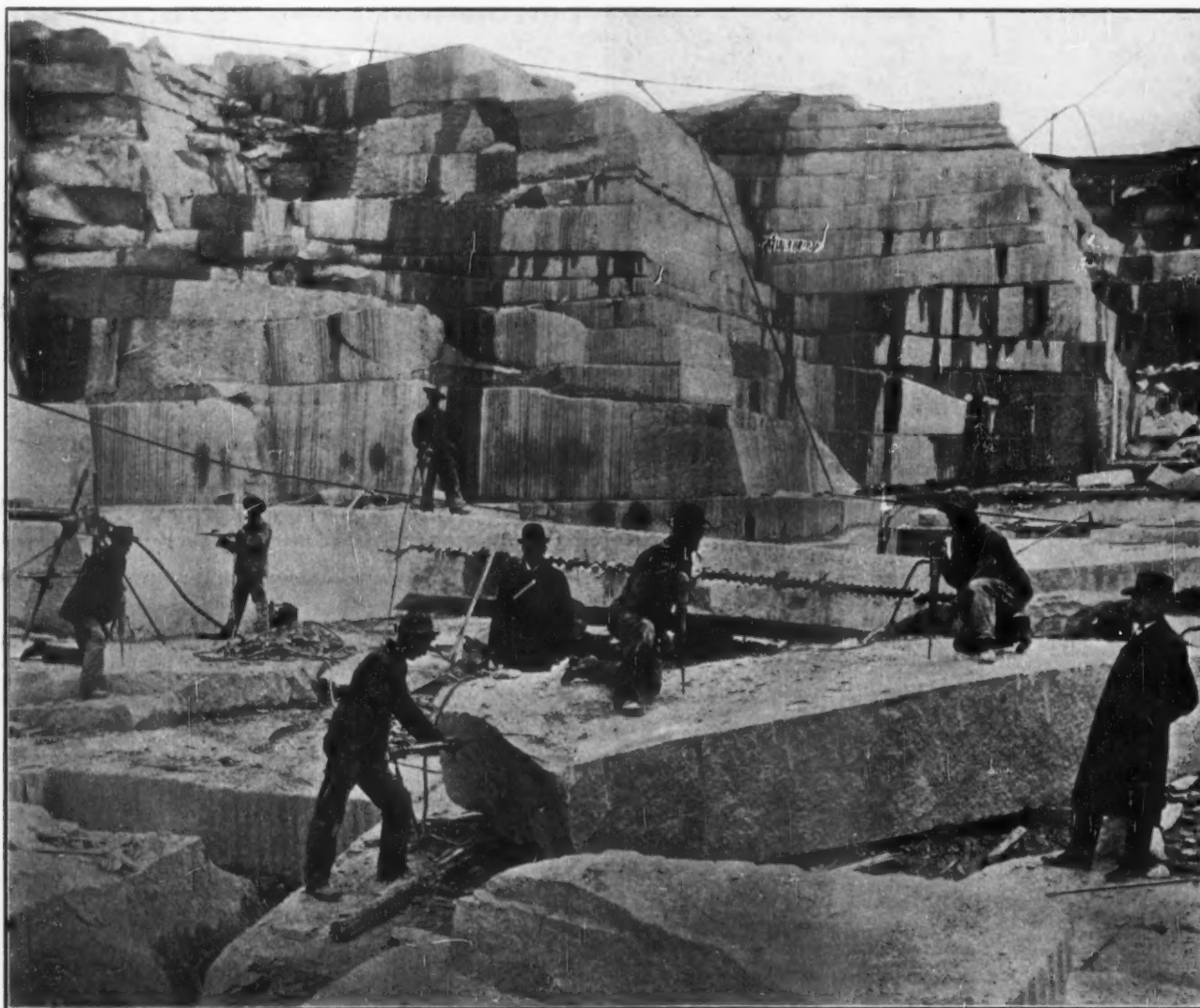
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ESTABLISHED 1868.

DONALD SMITH.

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—QUARRY OWNERS AND WHOLESALE DEALERS IN—



LIGHT, MEDIUM
AND DARK

BARRE GRANITE

ROUGH STOCK OF ANY DIMENSIONS TO THE LIMIT OF TRANS-
PORTATION PROMPTLY FURNISHED AT ALL TIMES.

Quarries and Cutting Works:

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BARRE, VERMONT.

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J. K. PIRIE

Proprietor of the Quarry formerly known as

THE WELLS, LAMSON & CO., DARK QUARRY, Graniteville, Vt.

I have been in the company known as Wells, Lamson & Co. for 21 years and had the personal supervision of this quarry during that period.



Rough stock furnished to the limit of transportation.

Stock squared and polished for the trade.

Only five quarries in Barre producing dark granite and mine is second to none.



Among the important contracts for which the Granite was supplied from my quarry, are the following:

Broom County Soldiers and Sailors Monument, erected at Binghamton, N. Y.

Soldiers and Sailors Monument, erected at Kokomo, Ind.

Soldiers Monument, at Wellsboro, Pa.

Polished Columns and Carved Capitals for Mausoleum, erected by John L. Flood, at San Francisco, Cal.

Monument erected to Hon. A. B. Martin, at Lynn, Mass. One of the finest private monuments in New England.

WETMORE & MORSE GRANITE CO.

Finest Light and Medium

GRANITE

for Monumental or Building Work.

Any Dimensions Furnished to Limit of Transportation.

Stock for

Large Work

a Specialty.



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OFFICE: MONTPELIER, VT.

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1826 The Granite Railway Co. 1903

SOLE PRODUCERS OF THE FAMOUS

Dark Blue "RAILWAY" GraniteMonumental and Building Work of all Kinds,
Our Specialty—Fine Polishing—Prompt Shipments.BATES AVENUE, WEST QUINCY, MASS.
Trains from track 21, South Station, Boston, at 16 minutes past each hour of the day.**T. F. MANNEX,**

PROPRIETOR OF THE FAMOUS

A. Reinhalter Extra Dark Quincy Granite Quarry.

Rough Stock for sale to the trade, also finished monuments, and every description of cemetery work. Rolls, Columns, Balls, Vases, Round Monuments, Balusters, etc. Turned and Polished.

T. F. MANNEX, West Quincy, Mass.**JOSEPH BISHOP**

Manufacturer and Wholesale Dealer in

Quincy Granite Monuments

From Best Light and Dark Stock

INTERVALE STREET

QUINCY, - - - - - MASS.

MILFORD (MASS.) PINK GRANITE

for Building Work or Monuments, can be obtained at lowest prices by applying to

T. F. MANNEX, W. Quincy, Mass.

A VIEW OF OUR PLANT IN MID-WINTER.

QUARRIERS, MANUFACTURERS AND POLISHERS.

Our plant is equipped with all modern granite working machinery. Pneumatic Tools, Surfacing Machines, Gang Saws, Column Lathes, all styles of polishing machinery, overhead travelling cranes, etc.

Representatives: W. E. Hussey, Utica, N. Y.
Chas. H. Gall, 79 Dearborn Street, Chicago.
C. C. Jenkins, 1 Madison Avenue, New York**BARCLAY BROS., Barre, Vt.****Here Is An Attractive Design
For Those Who Do Not
Like the Rock Face.**

We have added three more new designs to our series of nineteen. They are all two-piece jobs and good sellers. They vary from \$25 to \$50.

BECK & BECK, Barre, Vermont
Quarriers and Manufacturers**THE ROGERS GRANITE CO.**Vault Work and Monumental Work
Manufactured from best Barre Granite.

Estimates cheerfully furnished on all classes of Work.

P. J. ROGERS, Manager. BARRE, VERMONT.**CADEN STONE CO.****Green River Stone**the stone that gets white upon exposure
and then remains white.**Monumental Stone**

Block sawed, planed and Cut Stone.

SEND PLANS FOR ESTIMATES.

QUARRIES: HADLEY, KY.

OFFICE AND MILLS: 411 TO 425 EAST OHIO STREET,
EVANSVILLE, IND.

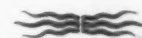
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THE ADVANCE DIAMOND SAW

AS BUILT BY

WILLARD F. MEYERS

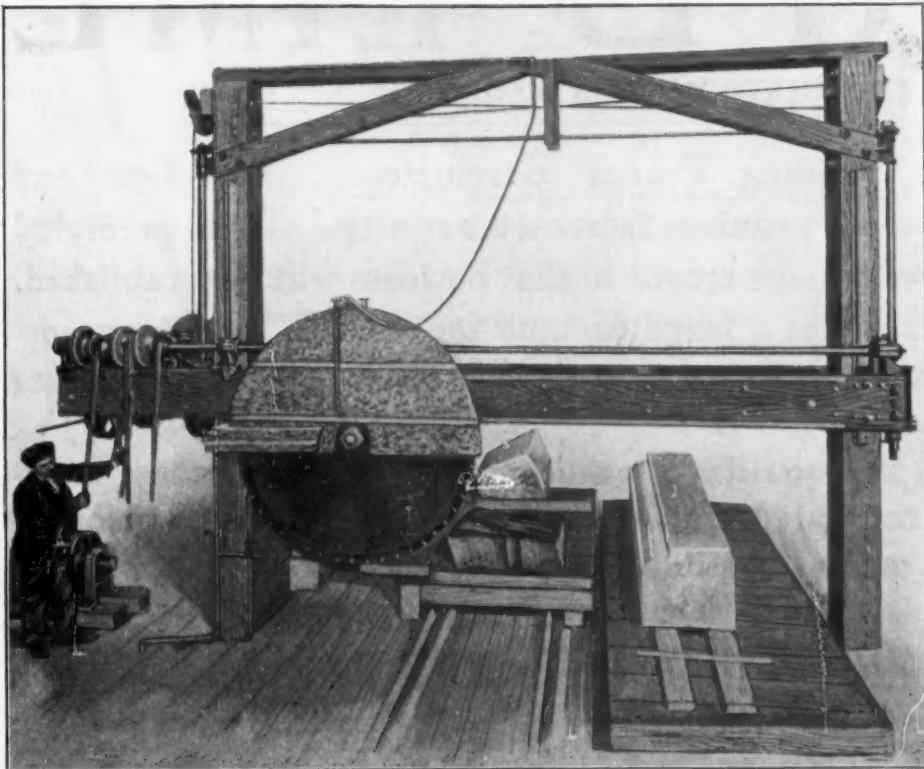
Vernon Avenue and 14th Street,
LONG ISLAND CITY, NEW YORK



MANUFACTURER OF

**Diamond Reciprocating and
Circular Saws**

For cutting all kinds of Building Stone,
Marble, Slate, Tile, etc. Automatic
Marble Polishing Machines and
General Stone Yard
Machinery.



A Happy and Prosperous New Year

IS ASSURED TO ALL USERS OF THE

Anderson Patent Traveling Crane

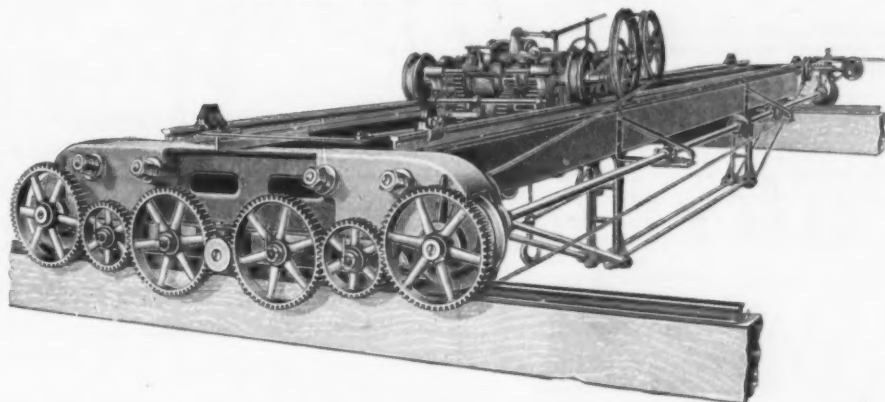
IF YOU HAVE N'T ONE, BETTER PURCHASE AT ONCE.

THE POWER TRAVELING CRANE

has become a recognized
necessity in every stone-
cutting plant.

EVERYBODY CAN AFFORD ONE

at the price we charge,
so all may enjoy its
many advantages.



A SIGNAL MAN ISN'T NEEDED
with our crane. Opera-
tor is over the work
where he can best see to
placing it.

THE PECULIAR METHOD OF ROPE

Driving employed is
patented and is a great
saver of power.

It is a Time Saver. It Handles Stone without injury. It Facilities Execution of Orders.
It Brings the Expense Account DOWN and the Profits UP. 10, 20 and 40 Tons
Capacity. Fully Described in our Catalogue. We are Prepared
to Furnish Plans for the Most Modern Stone Plants
and the Complete Equipment.

LANE MANUFACTURING COMPANY, Montpelier, Vt.

Tell 'em you saw it in ROCK PRODUCTS.



**Big
B**



Lime.



BIG B LIME

ITS HISTORY IS A STORY OF SUCCESS.

The Building Trades' Barometer. The Iron and Steel industry promises increased activity. It is predicted that a new tonnage record in that business will be established.

This means a large demand for LIME, and transportation facilities taxed. Isn't it wise to arrange early for your supply of LIME?

BIG B's quality is unsurpassed. That means satisfied and contented contractors for you. Our quick shipping facilities mean fresh lime on short notice.

A POSTAL CARD WILL BRING OUR 1905 MEMORANDUM BOOK.

**THE NORRIS AND CHRISTIAN STONE AND LIME CO.
MARION, OHIO.**



Red, Brown,
Buff and Black
**MORTAR
COLORS**

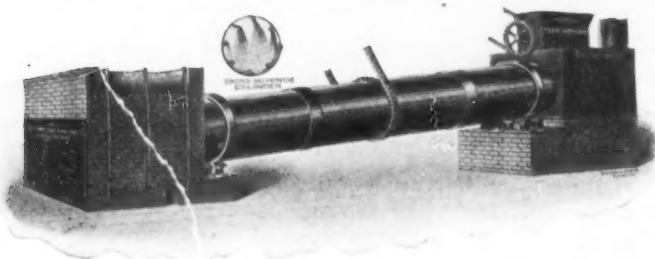


The Strongest and Most Economical in the Market.

Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color. Write for samples and quotations.

CHATTANOOGA PAINT CO., CHATTANOOGA, TENNESSEE.

SAND DRYER



Dryers, Screens, Elevating and Conveying Machinery, Mixers, Concrete Building Block Machinery of all kinds, Power Tampers, Etc.
Ask for catalogue and prices.

**The Standard Sand & Machine Company.
CLEVELAND, OHIO.**

Farnam "Cheshire" Lime Co.

OF CHESHIRE, MASS.
MANUFACTURERS OF THE

Celebrated Cheshire Finishing Lime

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for the manufacture of

SAND - LIME BRICK

Selling Department 39 Cortlandt St., N. Y., C. J. CURTIN, Pres't.

Swindell Patent Lime Burner

and Swindell Patent Water Seal Gas Producer.

The only successful method of Burning Lime
with Producer Gas.

40 per cent. increase in output of Kilns.
30 per cent. Saving in Fuel.

Eight Kilns in successful operation for past seven months at Toledo White Lime Co.'s plant, Martin, Ohio.

WM. SWINDELL & BROS.

German National Bank Building,

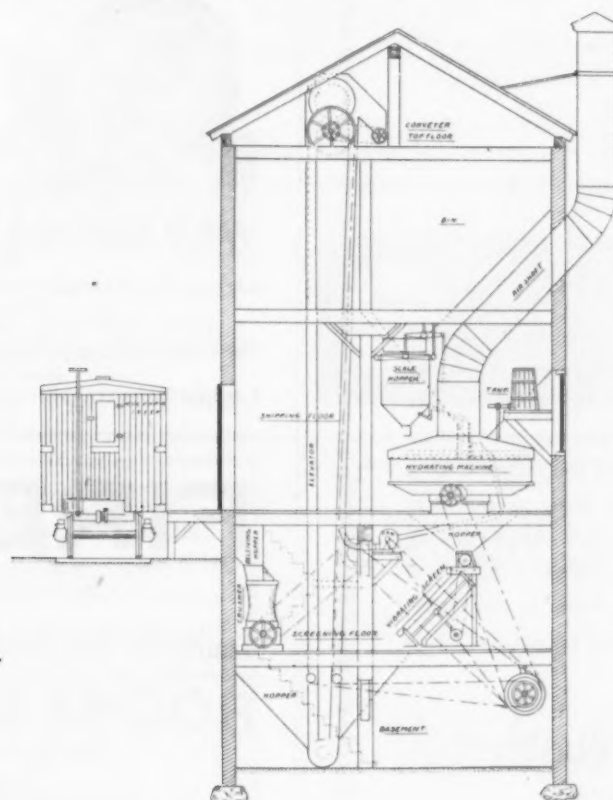
PITTSBURGH, PA.

Tell 'em you saw it in ROCK PRODUCTS.

NO MORE TROUBLES.

Lime Manufacturers as well as others have their troubles, but with a CLYDE HYDRATING plant in connection with their kilns would obviate a good many of their troubles, and turn a business that is running at a loss, into a paying and profitable proposition.

With a HYDRATING plant you can operate your kilns continuously. Hydrating the lime will act as a balance wheel. In stormy weather when there is no demand for lump lime, hydrate it and accumulate a quantity for rush orders. Extend your territory by being able to ship your products long distances and if your lime has any foreign matter in it hydrating will improve the quality, as all insoluble matter is screened out.



HYDRATING PLANT.

End view of Hydrating plant 40 tons (10 hours) capacity 24x36 feet in size, having storage for 100 tons, showing relative position of machinery consisting of one crusher, one hydrating machine, one vibrating screen and one exhaust fan for taking dust away from packing spouts, also necessary elevating and conveying machinery.

Note the simplicity of this layout, we can build you a plant to suit local conditions, or furnish you machinery and you do your own construction work.

No experiment, system being used in many of the largest and most successful plants in the country. Ask to have one of our experts call and talk the matter over with you.

Ask for Catalogue.

CLYDE IRON WORKS,
DULUTH, MINN.

WOOD PLASTER

The Coming Wall Covering

WE ARE THE ORIGINATORS.

After several years of experimental work we have reached **SUCCESS** and our goods are recognized as of the highest quality.

We wish to establish our trade in every important market, and will give local capital and local talent an opportunity to go in with us in the erection and operation of

MIXING PLANTS

Using our **IMPROVED MACHINERY** and **FORMULAS**.
The management of the local plant to remain with **LOCAL INTERESTS**.
Write us for full information.

The **ELYRIA WOOD PLASTER CO., Elyria, Ohio.**



We wish to contradict the claims made by any and all persons who are claiming to be the originators of, or that they can furnish patent formulas for the manufacture of Elastic Pulp Plaster, from wood fiber or pulp, or any of its kindred products. And we make this contradiction as a warning to any and all who claim the above, as well as to any one investing in such patent formulas, that we are the parent plant and sole owners of the original formula, and own the patents fully covering the same, in the United States and foreign territories, and will protect our rights accordingly.

The Napoleon Pulp Plaster Co.,
NAPOLEON, OHIO.

THAT'S IT.

The Brand that's
in Demand.



The New
Independent Mill.

Cement Plaster.

MANUFACTURED BY

The Plymouth Gypsum Co. FORT DODGE, IOWA.

H. ACHERMAN, Pres.

L. V. UNCAPHER, Sec.

J. W. THEW, Treas.

The Central Ohio Lime and Stone Co. of Marion, Ohio.

CAPITAL \$150,000.00.

We own One Hundred and Seventy Acres of the best and choicest lime and stone land in Central Ohio. The plant is located north of the city on the Pennsylvania R. R. We are now operating our plant with a large force of the most experienced men that can be found anywhere.

We produce and have the statements to show that we have the best white lime that is on the market. Our furnace stone is pronounced by experts and consumers to be the best they have ever used.

Our kilns and crusher plant are now in full operation and we solicit your patronage. We guarantee our product to be as good as the best, give us a trial order and be convinced of our statement. All orders placed with us will receive prompt attention.

The Central Ohio Lime and Stone Co.



ASH GROVE WHITE LIME ASSOCIATION MANUFACTURERS OF

High Grade White Lime.

KANSAS CITY, MISSOURI.

WESTERN LIME & CEMENT CO., MILWAUKEE, WIS.

Largest Manufacturers of Magnesian White Lime in the United States.
Daily capacity, 10,000 Bbls.

Exclusive Northwestern Distributing Agents.

For all the best Lehigh Valley, Pennsylvania, Brands of Portland Cements
Direct Importers of German Portlands.

Leading Shippers Throughout the Northwest, of Mason's Building
Materials in General.

HIGH GRADE

FIRE BRICK

For Cement Works, Lime Kilns, Cupolas, Steel and
Iron Works of every description :: :: :: ::

Louisville Fire Brick Works, K. B. GRAHN, Prop.,
Highland Park, Ky. P.O.

ROCHESTER LIME CO.

209 Main St., West, Rochester, N. Y.

MASONS' SUPPLY DEPOT.

Manufacturers of, and Wholesale Dealers in

Snow Flake Lime, Cement Building Blocks, Alpha Portland Cement,
Hoffman Rosendale Cement, Cummings Akron Cement, Kings Windsor
Wall Plaster, Kings Plaster Paris, Fire Brick, Fire Clay, Dynamite,
Caps, Exploders, etc.

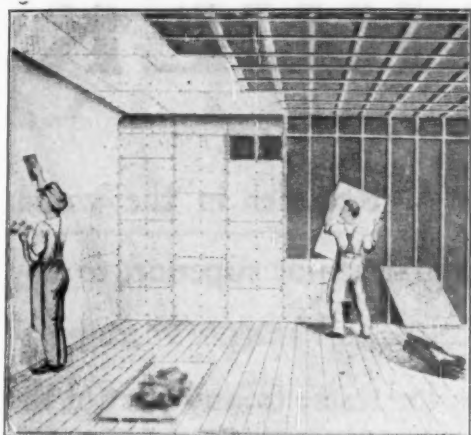
\$1,000.00 Dollars Reward

Will be paid for information, proof, and evidence,
enabling us to procure judgment against any person
or persons infringing on our Patents.

The Napoleon Pulp Plaster Co.,
NAPOLEON, OHIO.

Manufacturers of "the only" Elastic Pulp Plaster.

Tell 'em you saw it in ROCK PRODUCTS.



Sackett Plaster Board

A material used in the construction of Walls and Ceilings in place of wood and metal lath. Made in Sheets 32" x 36", 1/4" thick. Nailed directly to studding and finished with hard plaster.

Sackett Plaster Board is light, economical and durable. Will not warp, buckle or shrink. Is warmer than lath, consequently saves fuel. Is a fire retardant recognized by fire underwriters.

Walls and Ceilings constructed with these boards cannot fall.

GRAND RAPIDS PLASTER CO.

Manufacturers of Wall Plasters,
Calcined Plasters and other Gypsum Products.

WESTERN SALES AGENT.

GRAND RAPIDS, MICH.

SPECIAL MACHINERY AND FORMULAS

FOR THE MANUFACTURE OF

WOOD FIBER PLASTER, FIRE PROOF-
ING AND KINDRED PRODUCTS.

We furnish the latest improved FIBER MACHINE, (fully patented),
also FORMULAS, on a reasonable proposition. The strongest compa-
nies and oldest manufacturers are operating under my contracts.
WRITE FOR TERRITORY.

The Ohio Fiber Machinery Co.

J. W. VOGLESONG,
GENERAL MANAGER.

Elyria, Ohio.

WHEELING WALL PLASTER CO.,

MANUFACTURERS AND JOBBERS

Wheeling Plaster and Builders Supplies.

WHEELING, - - WEST VIRGINIA.



DRYERS
OF EVERY TYPE
CONSTRUCTED FOR ALL PURPOSES.
BEFORE PLACING YOUR ORDER CONSULT
UNITED STATES DRYING ENGINEERING CO.
66-70 BEAVER ST., NEW YORK, U.S.A.

<p>FLEXIBLE ELASTIC FIRE PROOF</p>	<p>ORR'S "MASTIC" BRAND <small>PATENTED AND GUARANTEED</small></p>	<p>NO SAND NO LIME NO HAIR</p>
---	---	---

"Mastic" Wood Fiber Wall Plaster is the restoration of one of the lost arts. To produce plaster without the use of sand, lime or hair is very novel, yet this is what genius has accomplished—"Pozzuolana Product." For strength, durability, easy working, it has no equal. "MASTIC" is endorsed by architects, builders and contractors alike as the ideal wall covering. Full plans for equipping new mills furnished with territory rights. Patents on machinery and formula process. Owned and controlled by W. H. ORR, Secretary and Manager of the

MASTIC WOOD FIBER PLASTER CO.

MAIN OFFICE: 607 State Life Building, INDIANAPOLIS, IND.
FACTORY OFFICE AND WORKS: 1705 West Washington Street.

MASTIC

THE NEW PROCESS

Wood Fiber Wall Plaster.

A Winner from the beginning. Architects and Artisans unite in its praise. The demand for this famous brand of wall plaster fast becoming universal. Formulas and machinery protected by U. S. letters patent. Territory rights to manufacture for sale on reasonable terms. Plans and specifications for new mills furnished. Machinery supplied and located at minimum cost. Trade supplied with MASTIC from our mills. If this looks good to you write

The Ohio Wood Fiber Plaster Co.

COLUMBUS, OHIO.

WOODVILLE WHITE LIME CO.

QUARRYMEN AND MANUFACTURERS OF

White Enamel Finish

**For Plaster, Sand-Lime-Brick
and Small Packages for the
Building Trade.**

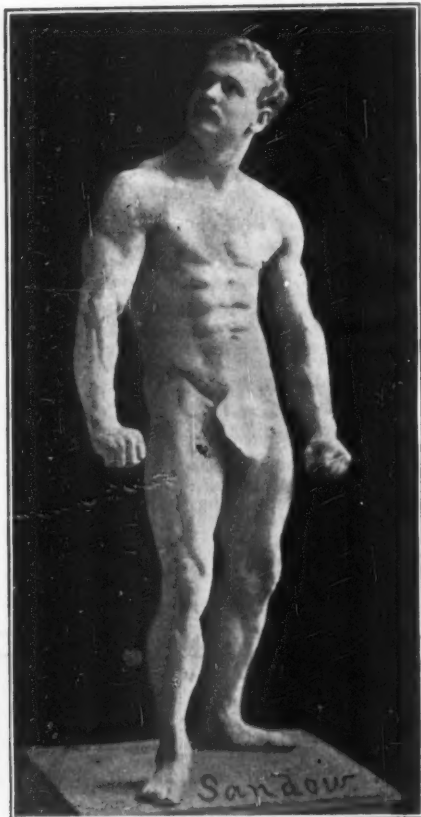
With modern machinery and experience.
We are specialists. A trial will make you
a regular customer.

WOODVILLE, OHIO.

Tell 'em you saw it in ROCK PRODUCTS.

STUCCO RETARDER

AS STRONG AS SANDOW.



We are the largest manufacturers of Retarder in the world.

We guarantee our goods to be equal, if not superior, to any on the market.

We will prepay freight on samples for tests, to any part of the United States or Canada.

Information regarding the manufacture of Wall Plaster, cheerfully given.

The **BINNS STUCCO
RETARDER CO.**
UHRICHSVILLE, OHIO.

PATENT SOAPSTONE FINISH

PLAIN AND IN COLORS FOR WALLS AND CEILINGS.

Patent Soapstone Mortar.

Prepared in any Color for Laying Pressed and Enamelled Brick, Stone Fronts, Terra Cotta, Chimneys, Fire Places, Etc.

The Dodge Blackboard Material or Artificial Slate.

The Potter Blackboard Material.

SOAPSTONE MICA. CONCRETE DRESSING.
CRUSHED, GROUND AND BOLTED SOAPSTONE.

AMERICAN SOAPSTONE FINISH CO.
C. P. DODGE, Proprietor. CHESTER DEPOT, VT.

OLDEST. STRONGEST. BEST.

STUCCO RETARDER

Our Stucco Retarder is both strong and uniform, and will not deteriorate with age.

PREPAID SAMPLE SENT UPON REQUEST.

CHEMICAL STUCCO RETARDER CO.,
Incorporated 1895. WEBSTER CITY, IOWA.

B. S. NEWTON, President.
1829.

GEO. E. NEWTON, Treasurer.
1904.

Seventy-five years of successful business is our proud record.

WE ARE PRODUCING THE HIGHEST GRADE OF
**Nova Scotia Land and Pure White
Windsor Calcined Plaster.**

Our extensive plant is complete in every department.

The latest mechanical improvements.

Unsurpassed facilities for filling large orders promptly.

Abundant resources.

Send us your orders and let us figure for you.

We can give you absolute guarantee of reliable goods.

Our long experience is at your service.

RED BEACH PLASTER CO.
RED BEACH, ME.

Tell 'em you saw it in ROCK PRODUCTS

STUCCO RETARDER

We guarantee our retarder as strong as any made and to be absolutely uniform in strength.



VIEW DURING CONSTRUCTION.

All shipments made from large stock of properly aged material. Insuring uniformity.

Information concerning plaster formulas furnished.

Freight prepaid on sample tons for trial order. If the retarder does not prove as economical as any made, we take the material off of your hands and make no charge for retarder used in making your tests.

Does this look good to you? Does it look as if we were afraid of the results of your tests?

THE OHIO RETARDER COMPANY, PORT CLINTON, OHIO.

The Ohio Lime Company,

MANUFACTURERS OF AND WHOLESALE DEALERS IN

WORKS AT

Fostoria, Ohio.
Gibsonburg, Ohio.
Sugar Ridge, Ohio.
Tiffin, Ohio.

Ohio White Finishing Lime,
Ground Lime, Lump Lime,
Fertilizer, Hydrate Lime,
Cement, Plaster,
Hair, &c.

Capacity
3500 Barrels
Per Day.

OFFICE:

209-210-211 CHAMBER OF COMMERCE BUILDING.

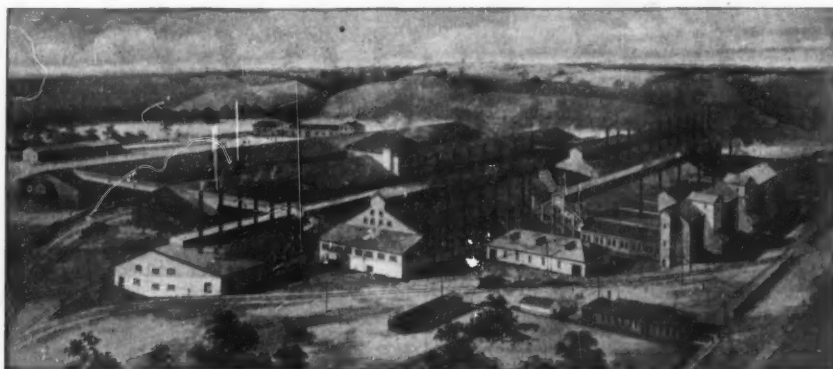
TOLEDO, OHIO.

"CREAM OF LIME"

Produces the Smoothest,
Hardest and Best Finish.

The **BUCKEYE LIME CO.** GENOA, OHIO.

Tell 'em you saw it in ROCK PRODUCTS.



A Perfect Cement

THERE ARE
SOME VERY
GOOD REASONS
Why we Place

WHITEHALL on the Pinnacle
of Perfect Cements.

AMONG THEM MAY BE MENTIONED THE FOLLOWING:

Our mill is up-to-date in every respect.

Our mill is a unit, and not a number of small mills run with more or less regularity.

All of our raw material is quarried on our own property.

We have a large corps of competent chemists employed at our mill, who carefully make chemical tests every hour during the day and night on the raw material as well as the finished product.

The clinker from our rotary kilns is particularly small, due to mechanical arrangements used in our mill only, consequently, on account of the smallness of the clinker, we are able to thoroughly burn the center, or, in other words, the entire clinker.

We confine ourselves to one uniform, standard grade of Portland Cement, and sell it under our registered trade-mark.

WHITEHALL is honestly, generously and thoroughly made, with the individual features above outlined, making it the standard of perfection.

The Whitehall Portland Cement Co.

1719-1725 LAND TITLE BUILDING,
PHILADELPHIA, PA.

172 E. Washington Street,
CHICAGO, ILL.

141 Milk Street,
BOSTON, MASS.



Louisville Hydraulic Cement.

Thirty million barrels used in important construction west of the Alleghenies.

Thorough reliability demonstrated by over seventy years' continuous use, most of the bridges, sewers and public works having been built with Louisville Cement.



Louisville Cement with two parts sand makes mortar as strong, after six months, as mortar made of Portland Cement with four parts sand.

The best work is the kind that accomplishes all the objects sought at least expense.

Illustrated Pamphlets Mailed on Application.

Western Cement Co.

281 W. Main St. Louisville, Ky.



**CHICKAMAUGA
Cement Co.**
CHATTANOOGA, TENN.



HYDRATED PORTLAND LIME

— A CEMENT LIME —

Ready for Use. Attains Great Strength.

DIXIE ROCK CEMENT

THE SOUTHERN NATURAL HYDRAULIC CEMENT

Write for Prices and Particulars



Manufacturers: Sales Office, Holland Building, St. Louis.

Tell 'em you saw it in ROCK PRODUCTS.

Buckeye Portland Cement Co.

ESTABLISHED 1888.

Manufacturers of the celebrated
"Buckeye" brand of

Portland Cement

"Buckeye" has stood the wear and tear in many important places for the past fifteen years and under the new process of manufacture is now better than ever :: ::

WE INVITE YOUR
CORRESPONDENCE.

Bellefontaine, Ohio.

The Best Portland Cement Is

"LEHIGH"

MANUFACTURED BY

Lehigh Portland Cement Co.

ALLENTOWN, PA.

Write for Catalogue.

Capacity, 4,000,000 Yearly.



THE OMEGA PORTLAND CEMENT CO.

F. M. STEWART, President.

ISRAEL WICKES, Vice President.

GEO. H. SHARP, Superintendent.

HOMER C. LASH, Chemist.

CHAS. F. WADE, Sec'y-Treas.



JONESVILLE, MICHIGAN.

Chicago Portland Cement Co.

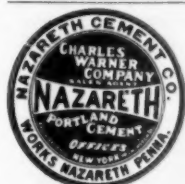


MANUFACTURER OF...

"CHICAGO AA" PORTLAND CEMENT.

We make one brand only.

The best that can be made.



"LIMOID"

SEWER PIPE
FIRE BRICK
PLASTER, ETC.



Charles Warner Company



LAND TITLE BUILDING,
PHILADELPHIA.

WILMINGTON,
DELAWARE.



A
STANDARD
PORTLAND



FOR
UNIVERSAL
USE

CEMENT DEPARTMENT.

ILLINOIS STEEL COMPANY,

The Rookery,

CHICAGO, ILL.

BANNER CEMENT CO., LOUISVILLE CEMENT.

MAKERS OF THE FAMOUS BANNER BRAND OF

Guaranteed that 90 per cent. will pass a
ten thousand Mesh Sieve.

WE SELL TO DEALERS ONLY.

GENERAL OFFICE: MASONIC TEMPLE,

CHICAGO, ILL.



PENINSULAR PORTLAND CEMENT CO.

MANUFACTURERS OF

High Grade Portland Cement

GENERAL OFFICE:

JACKSON, - - - MICHIGAN.

CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

Glenwood Lime, Banner
Brand Louisville Cement,
Portland Cements and
Building Materials.

St. Louis, Mo.

Newaygo Portland Cement Co.

Sales Office: Michigan Trust Building,
GRAND RAPIDS, MICH.

Write us for prices.

Send us your orders.

Tell 'em you saw it in ROCK PRODUCTS.

WE SELL THE FAMOUS BOWEN CHEMICAL FORMULA

SUPERVISED BY MR. BOWEN HIMSELF

We sell to contractors, anywhere, who use Sand and Cement, this invaluable Formula.

CONTRACTORS WORK ALL WINTER

Make brick and building blocks out in coldest weather. The use of our Formula guarantees your work against HEAT and COLD and all changes of weather. Your building blocks, window sills, fence posts, in a word, wherever sand and cement are used, our chemical will crystallize your productions and make them durable and lasting as the hardest stone.

PRICES

One Case Formula Compound, \$4.00. This package will make 50 gallons of chemical, 300 building blocks, or ten thousand Sand and Cement brick.

A trial will convince you that you can not afford to be without it. SEND TO-DAY.

We build and equip Sand and Cement Brick plants. Write us for particulars.

WESTERN BRICK CO.

No. 12 South Second Street, KEOKUK, IOWA, U. S. A.

R. H. BOWEN, General Manager.

205 Whitney Bldg., Detroit, Mich., Teague & Vaughn, Mgrs.

NEW ERA CEMENT ROOF TILING

The Best Roofing Material in the World. The Most Profitable Enterprise of the Day.

INEXPENSIVE. They cost no more than wooden shingles.

EVERLASTING. The material improves with age and is indestructible, two parts of sharp sand and one part of Portland Cement being used.

HANDSOME. Can be made in all desirable colors which cannot fade and never need painting.

FIRE, DUST AND WATERPROOF. Fire has no effect on them; dust, rain or sleet cannot find their way through this roof, as the tiles are double interlocking and form an impregnable sheet of cement.

NO ROOF BOARDS necessary, strips 1x3 inches placed 8 1/4 inches apart do the business.

NO HEAVY ROOF CONSTRUCTION needed, as they weigh 150 lbs. less per square than slate.

OUR PATENTS cover the United States and Canada. We will dispose of them for any State, County or City. We manufacture our own machines and guarantee them.

AGENTS WANTED FOR EVERY STATE.

FURMAN CONSTRUCTION CO.

613-619 FORT ST. WEST,

DETROIT, MICH.

J. B. Molyneux & Co.

MANUFACTURERS OF

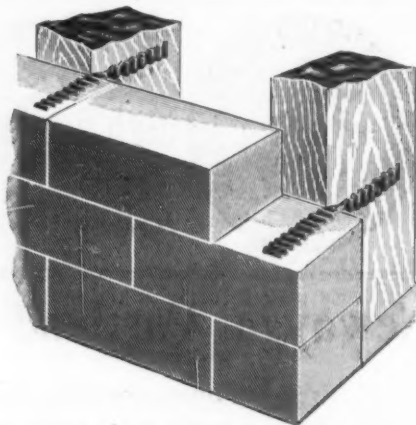
GALVANIZED CORRUGATED

WALL TIES

Same tie used in both solid wall and to fasten Veneer course to studding.

P. O. Box 127,

CLEVELAND, O.



Wall Tie as used to fasten Veneer course to studding.

SAND=LIME BRICK

If you desire to produce the very highest quality brick possible you must install the "SCIENTIFIC SYSTEM."

SCHWARZ SYSTEM BRICK CO.,

8-10 Bridge Street, NEW YORK CITY.

SAN FRANCISCO OFFICE: 320 Crossley Building.

Concrete, Asphalt Paving, Roofing Contractors

GRANITOID PAVING

Ransome System Reinforced Concrete
Factories, Grain Elevators, Silos, Etc.

Mastic Asphalt Paving

Breweries, Warehouses, Cold Storage Plants.

COMBINED CURB AND GUTTER

COMPOSITION ROOFING

Asphalt, Pitch and Gravel Roofing
Ready Roofing and Building Papers

ROOF AND METAL PAINTS

SOUTHERN ROOFING AND PAVING CO.,

INCORPORATED.

1006 West Main Street,

LOUISVILLE, KY.

FOWLER & PAY,

Brown Hydraulic Lime, Austin Hydraulic Cement, Jasper Wall Plaster, Brick, Stone.

CEMENT WORKS: Austin, Minn.
PLASTER MILL: Ft. Dodge, Iowa.
WAREHOUSE: Minnesota Transfer.

MANKATO, MINN.

OZARK COOPERAGE CO.

MANUFACTURERS OF

Lime, Cement and Salt Cooperage Stock.

We are specialists and can supply your wants promptly.

Frisco Building,

ST. LOUIS, MO.

Tell 'em you saw it in ROCK PRODUCTS.

Sand-Lime Brick



AMERICAN SYSTEM

Sand Lime brick plants are now in operation all over the country, but the most successful are those operating under our American System.

No chance for failure by our methods, as we install the plants complete, start and operate same under guarantee until 100,000 brick are made.

No Royalties, no secret process, and no Chemicals; our plants are automatic and continuous in operation.

Guarantees absolute, and all money refunded in case of failure.

New Illustrated Catalogue just out. Sent free on application.

AMERICAN SAND-LIME BRICK CO.

GREAT NORTHERN BUILDING, CHICAGO, ILL.

NEW YORK OFFICE; 39 Cortlandt St. SOUTHERN OFFICE; City Bank and Trust Co. Bldg., Mobile, Ala.; SAN FRANCISCO OFFICE; 501 Rialto Bldg.

E. C. EWEN, President,
Saginaw, Michigan.

F. KOMNICK, Vice-Pres.,
Elbing, Germany.

J. L. JACKSON, Sec. and Treas.,
Saginaw, Michigan.

The American Sandstone Brick Machinery Co.

.....MANUFACTURERS OF.....

The Komnick System Sandstone Brick Machinery.

Over 70 plants running in Europe and 15 plants running in the United States, others being installed in both countries.



Every part made in our own works and thoroughly tested before leaving our hands.

Factory and Office:

SAGINAW W. S., MICH.



FORWARD, MARCH!

Onward and forward is the progress of the PETTYJOHN HOLLOW BLOCK MACHINE!

WHY? Because everybody knows that concrete should not be disturbed after it is moulded or while it is setting, but this is the only machine with which it is possible. BLOCKS cost 6 cents to make; sell for 18 cents. One man can make 200 blocks per day. Machine and complete outfit cost \$125.00. Figure the profits. Fully Guaranteed. Sent on Trial.

Write for Catalog.

PETTYJOHN BROTHERS, 1314 N. FIRST ST., TERRE HAUTE, IND.

Tell 'em you saw it in ROCK PRODUCTS.

The Miles Concrete Building Block Machine.

Patented September 15, 1903. Other Patents Pending.

Forty Machines in one, it has given satisfaction wherever tried



No Up-to-date Contractor can afford to be without this Machine

Write for descriptive circulars to

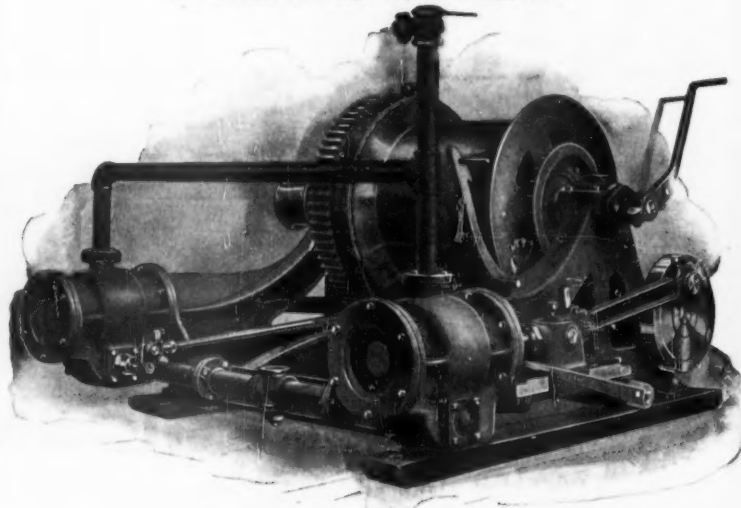
THE P. B. MILES MANUFACTURING CO.

Offices, 23 Dwight Building.

JACKSON, MICHIGAN.

The Quincy Mine and Quarry Hoist.

No Question About Its Merit or Efficiency.
You Decide Those Points Yourself.
Sent Subject to Inspection and Approval.



BUILT BY QUINCY ENGINE WORKS, QUINCY, ILL.

Cylinders 8x10, Drum 14x20.....	\$496.00
Cylinders 8x10, Drum 24x24.....	505.00
Cylinders 8x10, Drum 30x30.....	525.00

These prices are cash without discount, but cover the complete machine f. o. b. Quincy, Ill., or Chicago. You have your choice of the Reversible Hoist or Friction Drum Hoist. We have both for prompt shipment. For Quarry work or for Mine duty you can't beat 'em. Strong, quick, simple, modern. Shall I ship you one?

WILLIS SHAW,

MACHINERY.

CHICAGO, ILL.

"DOING THINGS."

The Harmon S. Palmer Hollow Concrete Building Blocks and Building Block Machines are changing the whole building outlook. Over 500 machines are now being used with success in this country. We offer machines with or without territory on reasonable terms. A perpetual injunction has been granted us by the U. S. court against a user of an infringing machine. Other suits at law now pending. Write us for free catalogue. One dollar for a beautiful album of fifty-five structures, some of the finest buildings in the country.

THE HARMON S. PALMER BUILDING BLOCK CO.,
WASHINGTON, D. C.

The Lloyd Portland Stone Machine Artificial Stone

IS THE LATEST WONDER FOR MAKING PERFECT



Makes an endless variety, plain and ornamental. Sizes ranging from 30 x 30 in. Reduced sizes to the fraction of an inch can be made easier and quicker than with any other machine. Makes rock face by splitting the stone in the machine before the block is removed, thus producing two rocks of natural effect. This has never been accomplished before. Send for circular.

375 Pacific Avenue,
PITTSBURG, PA.

"THE HANDY" Concrete Block Machine.

While we do not claim that a man can sit around, watch this machine and have it turn out gold dollars, we do claim there is no industry to-day that any man, endowed with an average amount of "horse sense" and a little "Yankee push" can reap such enormous profits from the money invested as the concrete building block business.

"The Handy" is simple, durable, cheap, portable and easy to operate. The greatest feature is the off-bearing plate which is simply a board 2 in. x 8 in. x 24 in. and is used for any sized or shaped block.

Watch for this space next month. We will try to have something to attract anyone interested in the block business, or what would be better, write to us.

Price complete, including tampers and all accessories necessary in the manufacture of blocks, \$50.00. Write us for any further information.

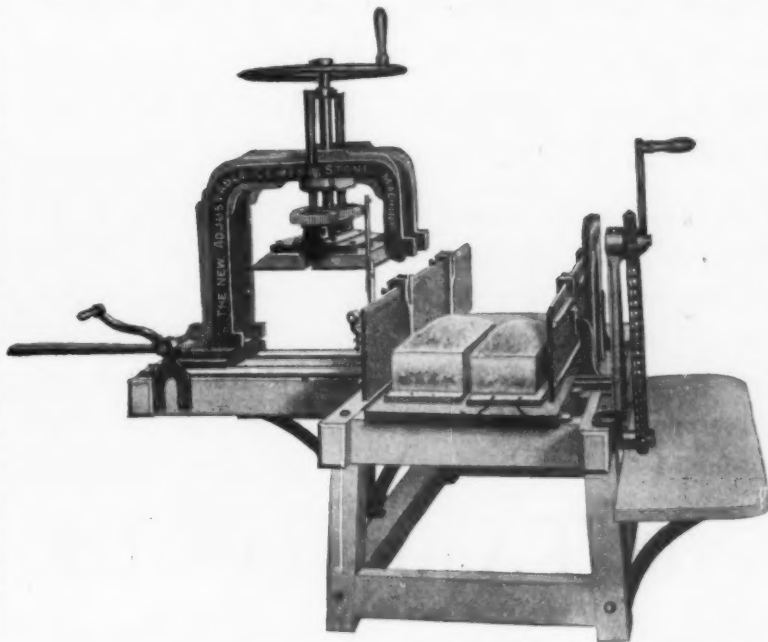
MEDINA CONCRETE CO.

MENTION "ROCK PRODUCTS."

MEDINA, OHIO.

Tell 'em you saw it in ROCK PRODUCTS.

The Brady Adjustable Cement Stone Machine.



It is adjustable, enabling the operator to make two stones at one operation; any desired design of face or moulding. It is adapted to hollow wall, veneer, foundation work, water tables, mouldings, copings, arches, piers, caps, sills, quoins, keys, pilinths, etc., and, in fact, any class of stone required in the construction of buildings. It makes stone in sizes from 6 x 2 x 2 to 17 x 60 x 8, and two stones at one operation in sizes from 6 x 2 x 2 to 8 x 60 x 8.

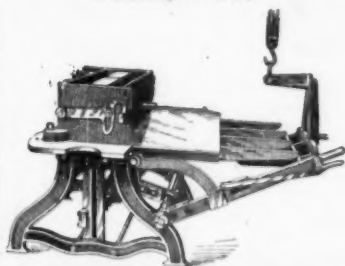
Cement stone made under positive and equal pressure and with two and one screened sand and cement facing will not absorb water or moisture. Build your building with cement stone manufactured by the Brady Adjustable; lay your walls with one or two-inch hollow space, using metal ties. It makes the driest, warmest and most durable, as well as the cheapest and strongest building you can build. Defacing is a thing of the past, if you use stone manufactured with the Brady Adjustable Cement Stone Machine. Write for our 1905 Catalog.

BRADY CEMENT STONE MACHINE CO., Ltd.,

410 N. Jackson Street,

JACKSON, MICH.

Absolutely the Best.



Normandin Block Machine—(Closed) the only durable machine on the market

"TEN MACHINES IN ONE"

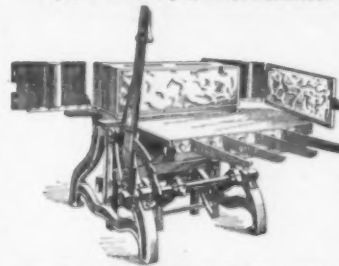
Normandin Hollow Concrete Block Machine

and its product, is universally recognized by the leading architects, contractors, engineers, builders, railroads and cement workers AS THE STANDARD.

Hundreds of Normandin machine plants in operation. The Hollow Block business is permanent and profitable, broadening in extent every day. It's not a question of material, but it is a question of machine. The Normandin is what you want, take no substitute. INVESTIGATE for yourself, in fact "look before you leap," get value for your money. Don't get a machine because it's cheap and be handicapped, when you get a contract for an up-to-date building, because you can't make the blocks wanted—Normandin Blocks are standard.

The Normandin machine is "ten machines in one" designed to save labor, material and expense. Adopted and used by the United States government engineers. "The Normandin must be right." The most practical machine ever manufactured. Has won over all competitors. We are pioneer block machine manufacturers, and have just the machine you want. We know what the trade demands, consequently we build our machines right. Thousands of Normandin Blocks being used daily. Send for full printed matter to-day.

Styles and Variety of Stone Unlimited.



Normandin Block Machine—(Open) and its Product. HIGHEST AWARDS Universal Exposition, St. Louis, 1904, for superior excellence. WE LEAD; OTHERS FOLLOW.

CEMENT MACHINERY CO.

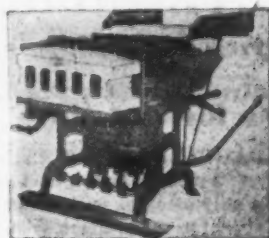
Factory, 220-222-224 North Jackson Street

Jackson, Mich.

Office Cooley Building

THE SIMPLICITY BUILDING BLOCK MACHINE

For the manufacturer of hollow or solid concrete building blocks. Adjustable for all sizes and shapes. Delivers the block on its side, a saving of labor. Wood pallets are used, other machines use iron pallets, a full set of which costs as much or more than price asked for our complete machine. CONSIDER WELL BEFORE PURCHASING. Agents wanted in every State. Ask for catalogue and prices.



"THE SIMPLICITY"

The Standard Sand & Machine Company, CLEVELAND, OHIO.



The Stringer Cement Block Machine

Latest Improved, Handiest, Quickest Adjusted.

Will make Blocks any size from brick up. Water Tables, Sills, Angles, Gables, Culvert and Sewer Blocks—

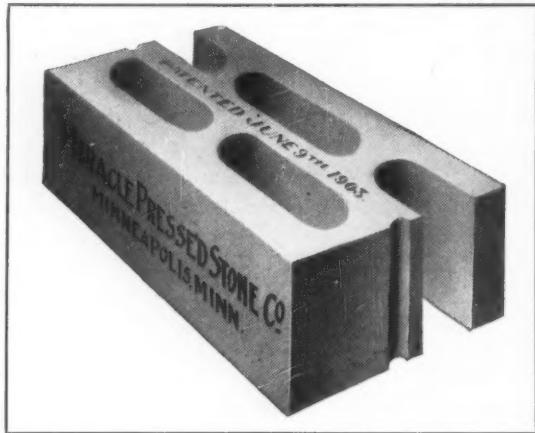
HOLLOW OR SOLID.

STRINGER MACHINE CO., Jackson, Mich.

Tell 'em you saw it in ROCK PRODUCTS.

MIRACLE BUILDINGS

Are Frost-proof; Damp-proof Walls of Miracle Double Dead Air Space Blocks. Let us tell you about the **MIRACLE METHOD** and **EXCLUSIVE RIGHTS TO MANUFACTURE.**



The average daily capacity is 120 a day for each mould; it is the only double air spaced kind that can be plastered on the inside without lath or furring strips. Our moulds are simple, do not get out of repair. No gearing to clog with cement; no expensive iron bottom plates. Most efficient and economical. We have a story to tell you about our world-famed

HAND TAMP TOOLS.

WRITE TO-DAY.

MIRACLE PRESSED STONE CO.

6th Floor, Northwestern Building,
Fisher Building, CHICAGO.

No. 1, Park Row, NEW YORK.

MINNEAPOLIS, MINN.
Boston Block, SEATTLE.

"On the high wave of popularity."

"The peer of all."



"The success of the age."

THE IDEAL HOLLOW CONCRETE BLOCK MACHINE

"That means something."

No wheels, no cogs, no gears, no chains, no cranks. Nothing to clog, break or get out of order. No loss of time or labor.

Our "Ideal" covers the four cardinal points, SIMPLICITY—RAPIDITY—ADAPTABILITY—DURABILITY. Face formed on bottom of mould. Cores withdrawn horizontally by lever, not by hand. *Guaranteed capacity:* 2 men, 10 hours, 200 blocks. A portable machine that can be carried with ease by 2 men. Over 200 in use in the State of Indiana alone. The only machine with which can be accomplished the facing of blocks by the Borst system. A business proposition to the maker of blocks. An appeal to the common sense judgment of the builder.

In corresponding with us we make our business your interests.

IDEAL CONCRETE MACHINERY CO.

Formerly AUBURN, INDIANA.

SOUTH BEND, INDIANA, U. S. A.

Drawer 789.

Tell 'em you saw it in ROCK PRODUCTS.

"The day of damp concrete walls is past."

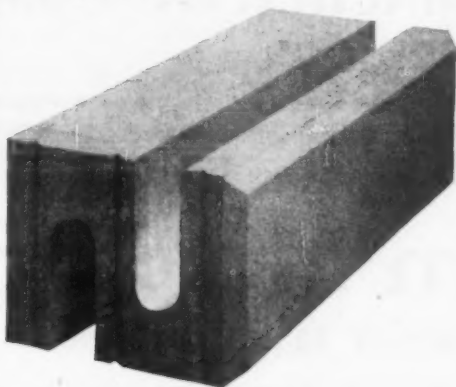
The Blakeslee Block

—IS—

Damp Proof and Frost Proof.

There are no continuously solid webs to carry moisture to the inside of the wall. There are no continuous mortar joints. Moisture simply cannot get through.

The Blakeslee basic patent No. 769,774 covers broadly any "Building block wherein there are no continuously solid portions from front to rear." (Claim 1 of patent.) It will be enforced against all infringers.



Our adjustable and automatic block machine is the leader everywhere.

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BLAKESLEE CONCRETE BLOCK & MACHINE CO.

2 Schultz Building,

COLUMBUS, OHIO.

Fisher's Hydraulic Stone System,

W. H. FISHER, Patentee.

Architects recommend it. People are delighted with it.

A Sure Money Maker.

We have solved the building material question. Every block a perfect one, because the tamping is done by hydraulic pressure and automatic hydraulic kneading, which drives out all of the air and closes all of the voids. The machine is entirely automatic and the process such that the necessary chemical reaction is not hindered. All shapes and designs, veneer blocks for frame structures, angular blocks for hollow walls. Walls built from our block are absolutely sanitary. We make thousands in a day, large profits are beyond question. Our product is in constant demand. This is the only system which at once removes the brick from the iron or wooden mold, thus giving the hardening process the greatest possible freedom. A plant can be seen in full operation at Memphis, Tenn., where the Memphis Hydraulic Stone Co. have one of the finest up-to-date plants in the country.

**ALL MACHINERY GUARANTEED
FOR ONE YEAR.**

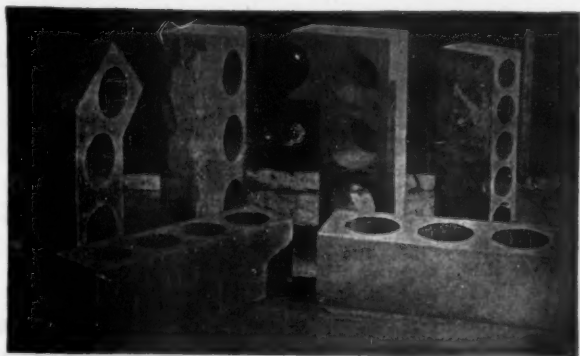
WRITE FOR TERMS OR INFORMATION

MOUNT GILEAD, OHIO.

STONE CHEAPER THAN BRICK.

Made under the new method without tamping or pressure on our machine which costs but

\$50.00



We Make Seven Stones

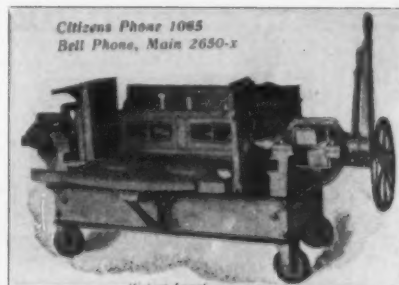
in one operation 2 ft. 6 in. x 9 in. x 10 in. No experiment; our work can be seen in thousands of buildings. Send for detailed information.

STEVENS CAST STONE CO.,

808 Chamber of Commerce, CHICAGO, ILL.

THE HAYDEN AUTOMATIC BLOCK MACHINE CO

112 West Broad Street, (P. O. Box 305.) COLUMBUS, OHIO.



Citizens Phone 1085
Bell Phone, Main 2650-x

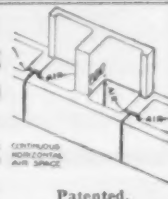
Simplest, most complete and swiftest machine on the market. Only perfect machine making face of block in horizontal position, producing most satisfactory work and variety of designs, impervious to moisture. All blocks released and delivered automatically to a support in front of the machine, ready to be removed for drying.

Write us for Catalogue before purchasing.

New York and Foreign Office: **HAYDEN AUTOMATIC & EQUIPMENT COMPANY,**
26 Cortland Street, New York, N. Y.



**HOLLOW
CONCRETE
WALLS AND
PARTITIONS
TWO-PIECE
SYSTEM**



Patented.

Would You Like to Learn

All about the two-piece wall containing the header bond, made of True Concrete, stronger in a 1 to 10 mixture than hand tamped damp sand and cement is in a 1 to 3 mixture? Every block made under heavy pressure, in steel moulds, in one set of which all the different widths of wall from 2 1/2 in. to 17 in. can be made by simply changing the adjustment, making a wall 50 per cent. hollow, containing an air chamber both in the horizontal and perpendicular, through which moisture, heat and cold can not penetrate—a block easily handled by one man—to which any facing desired 1/2-in. thick is applied before the block is pressed. One thousand sq. ft. of wall per ten-hour day made, cured and cared for with nine men—three times the daily product possible under any other system. Fully illustrated in prospectus, sent free.



THE AMERICAN HYDRAULIC STONE CO., Century Bldg., Denver, Col.

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Our Machines are Simple, Complete, Inexpensive, Reliable.

Either Hollow or Solid Concrete Blocks

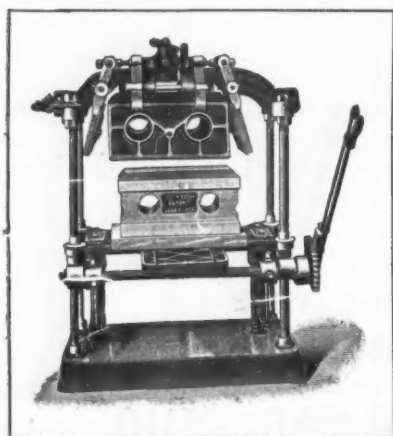
One Machine in a Section Means Many More Soon.

HERE IS A RECORD HARD TO BEAT—Out of 2,300 blocks in one run only ten were broken or imperfect. No dough-faced blocks produced, but a sharp rock face, rivaling granite or limestone for sharpness. We court comparison of our rock-faced block with anything in the United States. Price within the reach of all.

You can build your own house with our Machines and save money, even if you throw the molds away afterwards. Write For Particulars.

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The Cottom Artificial Stone Blocks made on the

"Cottom Machine"

Are Superior to All Others.

They are laid in the wall by pouring semi-liquid cement into and between them, the process being covered by patent, making A PERFECT WALL. For information address, :: :: ::

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No tamping—making more than a block a minute with ease.

The Fastest Machine

ON THE MARKET

Making Concrete Building Blocks.

The Product the Best Speed Saves Money

Evenly distributed pressure of five tons. Wedge shaped, curved or radial block, all shapes made with equal facility—any facing. Water-tanks. Culverts. Arches.

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A Colorless Liquid Applied Cold with a Brush to the Surface of

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Completely prevents the penetration of air and dampness. For full particulars on the above, also on materials for preventing penetration of dampness in basements, efflorescence on walls, etc., address

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Improved Automatic DRIERS

Specially Adapted to Sand, Lime, Stone, Clay, Etc.
CAPACITY AND ECONOMY. NO WEAR AND TEAR.

American Process Company

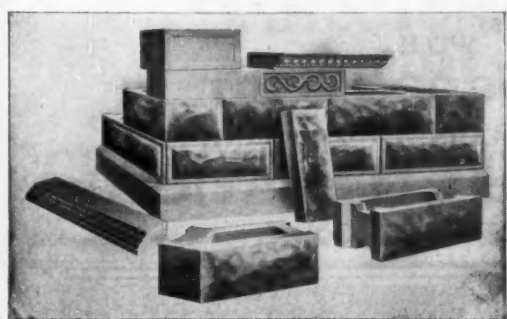
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Every Shape and Kind of Stone on

The Hercules Cement Stone Machine



MADE ON ONE MACHINE.

The cement saved over other machines alone pays a good profit.

Makes any sized hollow cement blocks from 2 in. to 5 ft. long, also doors, lintels, coping, ornamental designs, sills, etc.

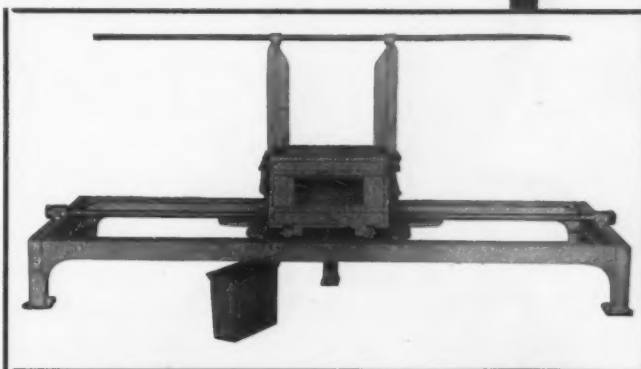
Tamps on the face of the mould allowing the use of a 2 to 1 mixture of sand and cement for facing, rendering the block impervious to water and true to pattern and a 5 to 1 mixture for backing—This is how cement is saved.

Simple construction enables

rapid operation by unskilled labor.

Hercules blocks in big demand for all building purposes, cheaper than brick or stone—far more durable.

Big money for the men who manufacture Hercules blocks. Small capital will set you up. Write to-day for catalog.



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Here is what you have been looking for!

Cement or Lime Brick Machine

Makes 10 perfect brick per minute with two unskilled workmen.

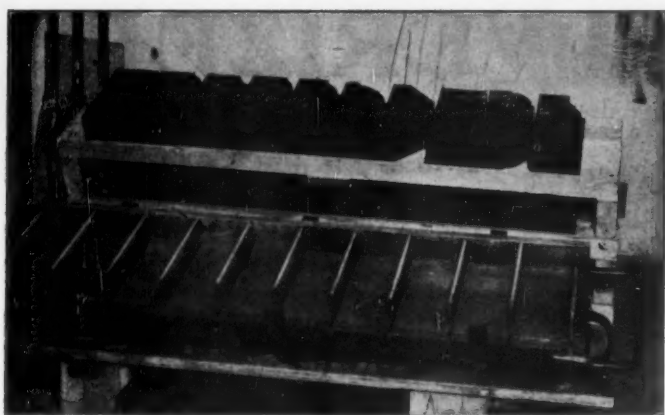
Be your own brickmaker.

Can be changed from plain to ornamental brick or vice versa with no loss of time or extra expense.

E. W. SEAMANS,

25 Fountain Street,

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Companies Organized and **SYSTEMS INSTALLED** with the most modern **EQUIPMENT.**

STANTON SYSTEM CONCRETE SAND-LIME BRICK.

Comprising the entire line of **COMPOSITION MATERIALS.**

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My COMPANIES manufacture Concrete Stone, moulded and cast, hollow and solid; ornamental designs and trimmings; Key-stones and Arches; Window Heads and Sills, Etc. **MONOLITHIC CONSTRUCTION.** Foundations, Bridges, Sub-ways, Sea-walls, Retaining-walls, Watertight Cellars, Silos and Stables, Sidewalks and Curbs; also face, medium and common Brick.

ELMER E. STANTON,

Originator and Sole Owner.

Concrete Engineering Experts, Inspectors and Directors of Operations Furnished.

SAND-CEMENT BRICK

are Revolutionizing the Brick Industry.

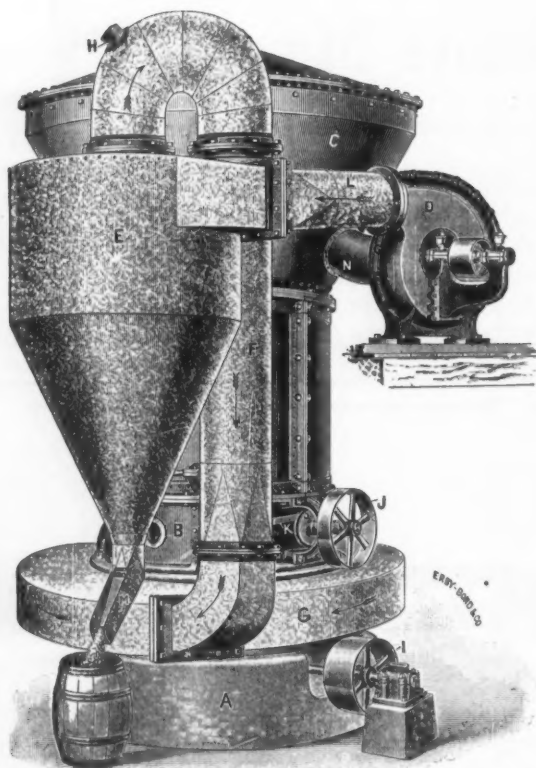
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The Raymond Roller Mill

WITH
Air Separator

GRINDS EXCEEDINGLY FINE AND IS
Absolutely Dustless
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One mill like cut grinds five tons per hour, to one hundred mesh fineness, of coal, lime, limestone, etc. We can refer you to the largest concerns in the world for references.

Special Separators for hydrated lime, cement or any material.

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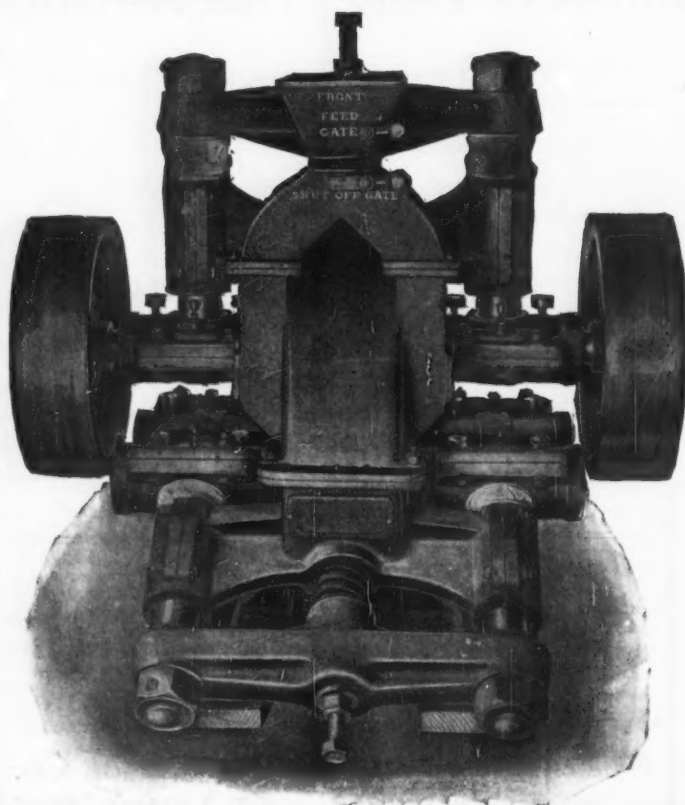
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THE KENT PULVERIZER



Takes one inch feed. Grinds to any fineness
from 10 to 200 mesh.

GRINDS PER HOUR WITH LESS THAN 25 H. P.

CEMENT CLINKER,	40 bbls.	to 98%	20 Mesh.
CEMENT CLINKER,	12 "	" "	100 "
LIMESTONE,	2½ tons	" "	200 "
LIME,	4 "	" "	100 "
ROSENDALE CEMENT,	43 bbls.	" 90%	50 "
QUARTZ TRAP-ROCK,	4 tons	" "	40 "

**You can easily figure from this what a
Kent Mill would save for you.**

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Says:—Four KENT MILLS are driven by one 75 H. P. motor.

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170 Broadway,

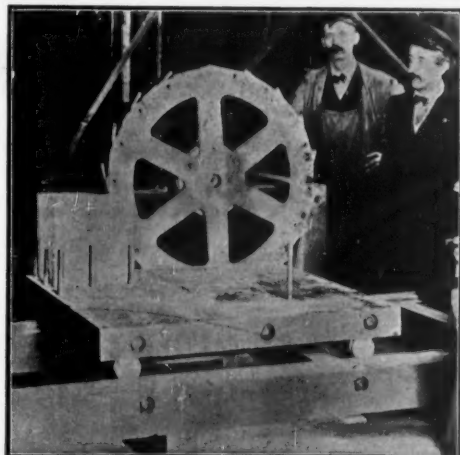
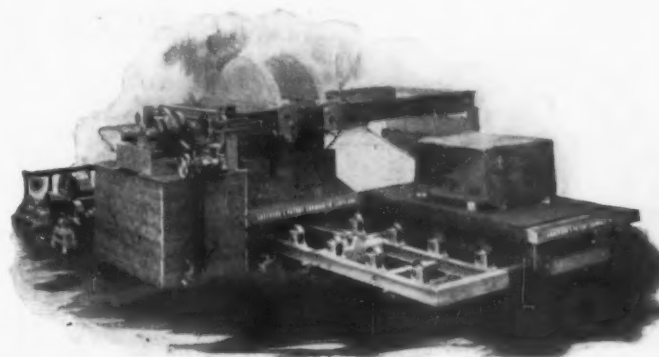
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The **QUINLEN EDGER**

Cuts soft stone at a saving of many dollars per day. Just patented and proven conclusively to be a success. Very simple and durable and price very reasonable. For particulars, write to

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For draining Quarry Pits you require a pump that will handle a large percentage of
GRITTY, MUDDY WATER
without the least injury to itself or its working parts.

THE PULSOMETER STEAM PUMP
IS BUILT FOR HARD WORK.

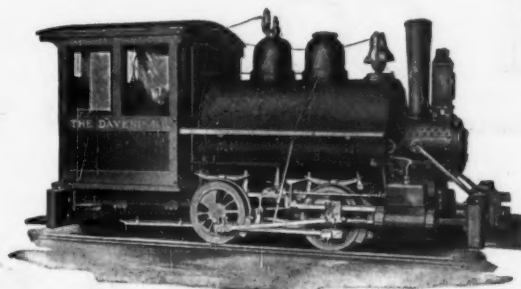
Has no easily deranged inside or outside mechanism. Requires neither Engine, Belt, Oil, Packing nor Special Foundation. Operates as well suspended as stationary.

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THE DAVENPORT LOCOMOTIVE WILL SAVE MONEY.

Special Designs for Special Purposes. Any Size, Any Gauge, Any Weight.

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just received for this type of gears from the same company—and this order three times larger than the others—comment is unnecessary. Order Nuttall Gears now and make more money positively.

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For Heavy Service and rough usage.

Designed and constructed to meet the requirements of heavy machinery—Stone and Cement Mills, Rock Crushers, etc.—and for handling rough materials of all kinds, wet or dry.

Endorsed by the highest scientific authorities for this class of work.

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CONSTRUCTED TO SUIT ALL REQUIREMENTS

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ALSO CONCENTRATION MILLS, SAMPLING WORKS,
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For Crushing all Kinds of Rock.

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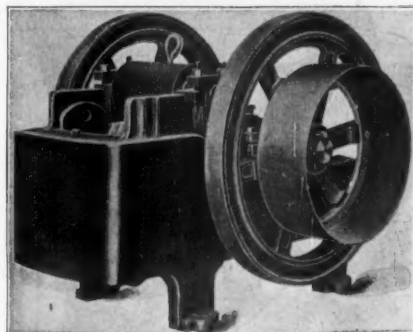
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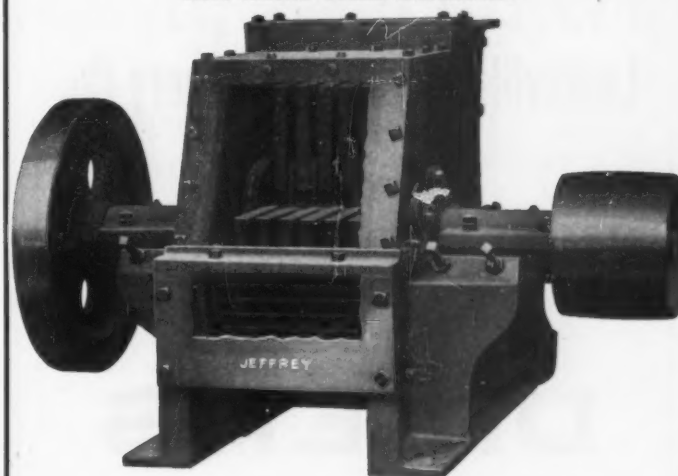
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SUPERIOR FEATURES.

Accessibility of working parts. Simplicity in changes of parts.
Substantial Pillow Blocks. Material partly crushed in suspension.

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Mica Schist or Fire Stone Linings

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Lime Kilns, Bessemer Converters and Cupolas, Etc.

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For all purposes.

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GEO. RAYMOND'S

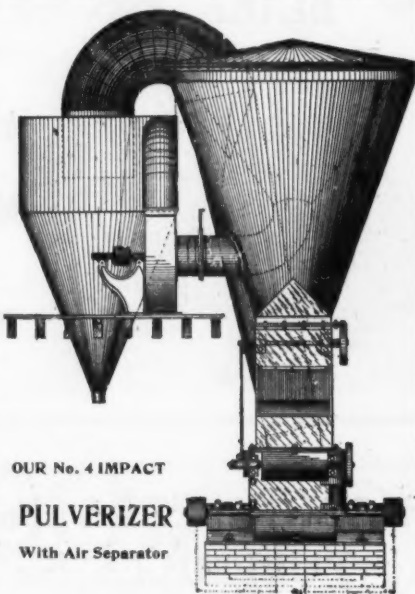
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**Centrifugal
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Self-balanced with Screen or
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Tube Mills with air separators and the Balance Ball Battery Mills will grind more and separate to any fineness desired, Cement, Clinker, Paint, Silica, Ore, Quartz, Lime-stone, etc., and take less power to run them than any other mills

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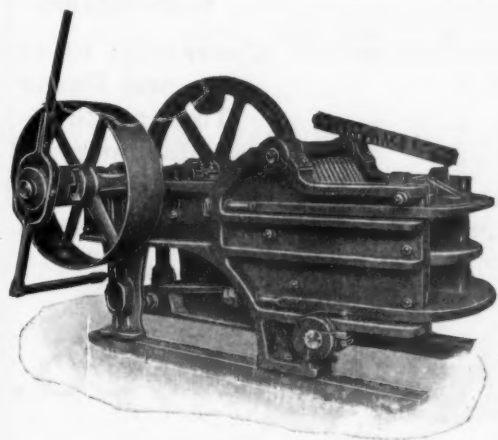
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We are now building the new Plymouth Mill at Fort Dodge, Iowa, the finest mill in the United States.

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for soft and medium
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GYPSUM MACHINERY.

We make a complete line, including
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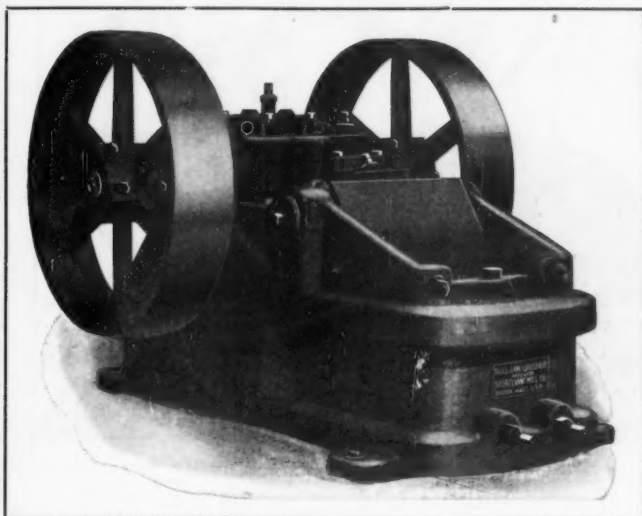
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CRUSHING, GRINDING

Pulverizing and Screening Machinery



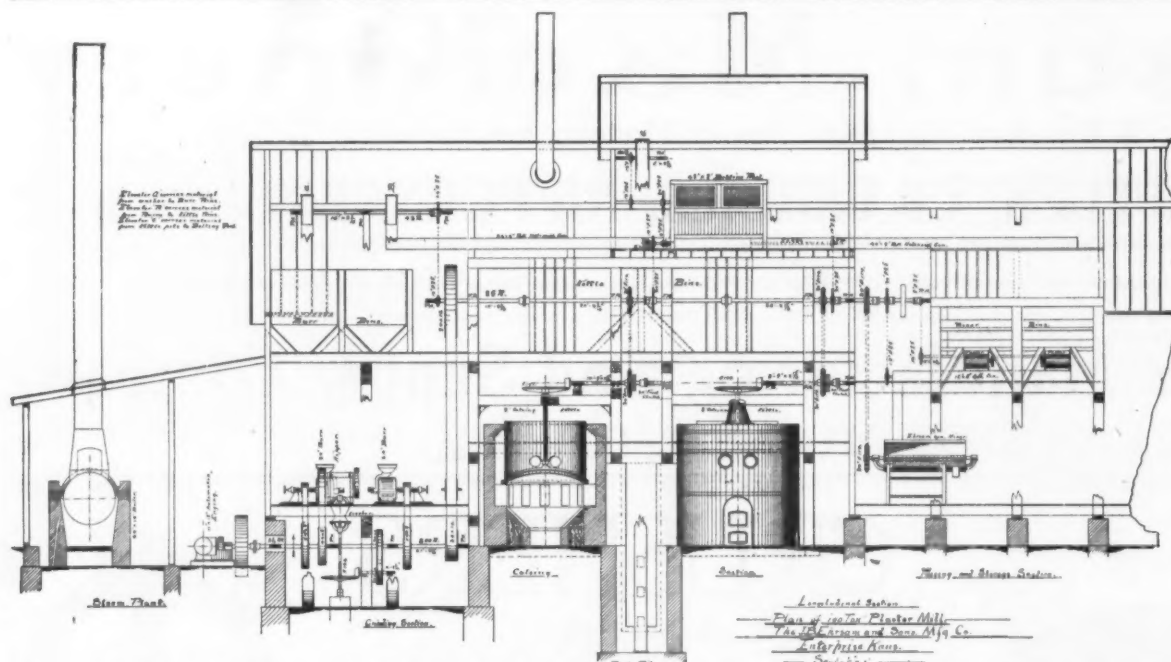
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10 Varieties of Crushers
Crushing Rolls
Grinding Mills
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Boilers, Blowers, etc.

Tell us your requirements and we
will send full particulars

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Calcining Kettles
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NEW PROCESS, NO GRINDING, NO SEPARATING, AUTOMATIC PROCESS from BEGINNING to END. ♡ ♡ ♡ ♡ ♡

NO HANDLING of MATERIAL after it is FED to MACHINE.

LUMP LIME as it comes from the KILNS, CONVERTED DIRECTLY into the POWDERED HYDRATE.

THE AIR being excluded during the process, the product contains NO AIR-SLAKED LIME.

ALL PARTICLES of STONE or FOREIGN MATTER are AUTOMATICALLY REJECTED, instead of being GROUND with the PRODUCT, and hence it contains no unslaked particles.

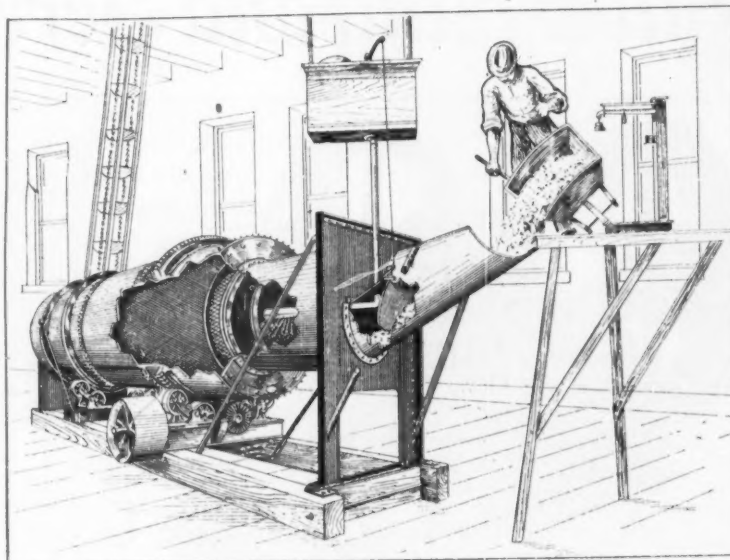
THE HYDRATE is ready for IMMEDIATE USE or SHIPMENT within a FEW MINUTES after the QUICK LIME enters the HYDRATOR. NO SEASONING in BINS necessary.

The COST of converting the QUICK LIME into HYDRATE is more than off-set by the GAIN in WEIGHT.

THE HYDRATOR embodying the PROCESS, will be sold outright—NO ROYALTIES.

YOU are CORDIALLY INVITED to EXAMINE this MACHINE in OPERATION, or if you will send not less than ten barrels of your lime to the Company, we will hydrate it for you free of charge and return you the product.

SEND NOW for ILLUSTRATED CATALOGUE giving full particulars.



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QUALITY HIGH. ATTRACTIVE PRICES

*THAT'S THE DOUBLE IMPRESSION
WE AIM TO GIVE OUR CUSTOMERS.*

WE WANT YOUR BUSINESS

SHIPMENTS MADE FROM

MILLS LOCATED IN THE

NORTH

EAST

SOUTH AND

WEST.

*YOUR NEXT ORDER WITH
"BELL-IN-THE-BUSINESS 50 YEARS."*

THE EDWIN BELL CO. PITTSBURG, PA.

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THE MOST CONVENIENT.
SATISFACTORY &
CHEAPEST PACKAGE FOR
**CEMENT,
PLASTER,
HYDRATED LIME**

WE SHALL BE PLEASED TO SEND
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National System

Lime Hydration

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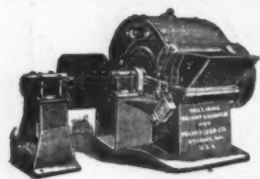
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Steel Plate Work.

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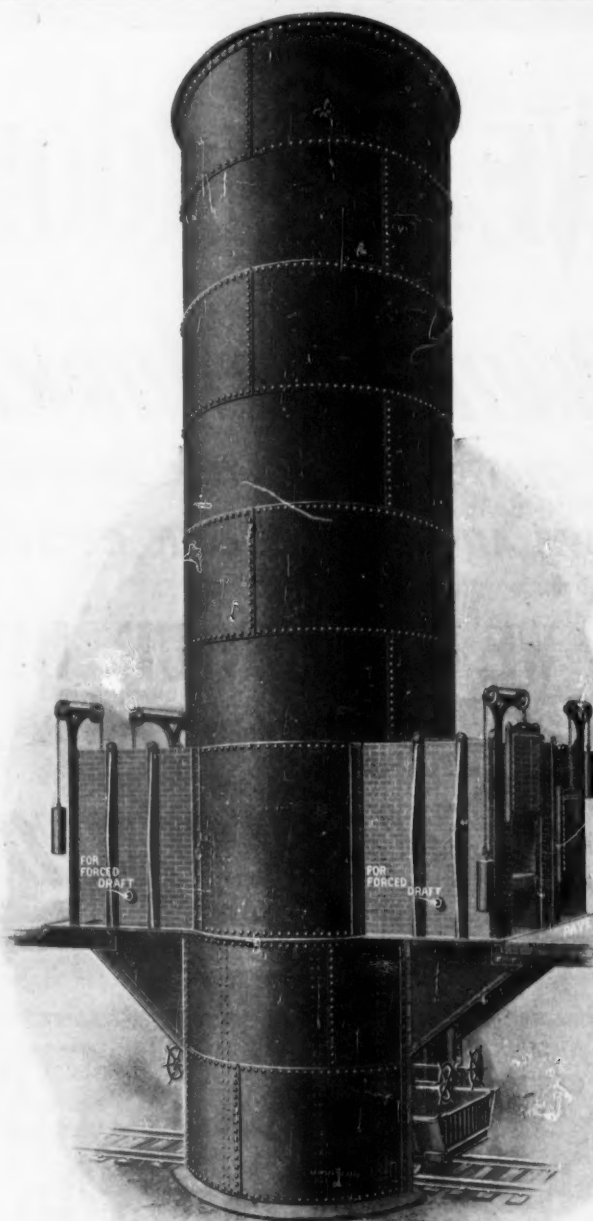
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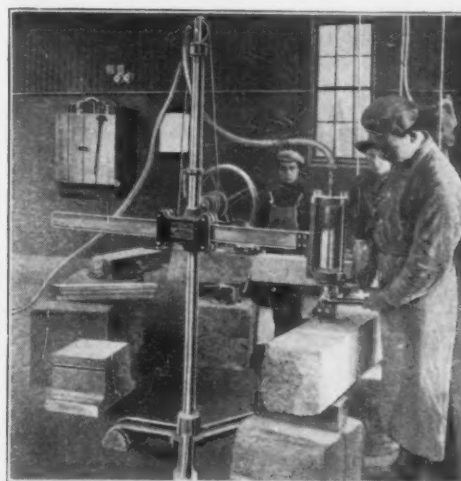
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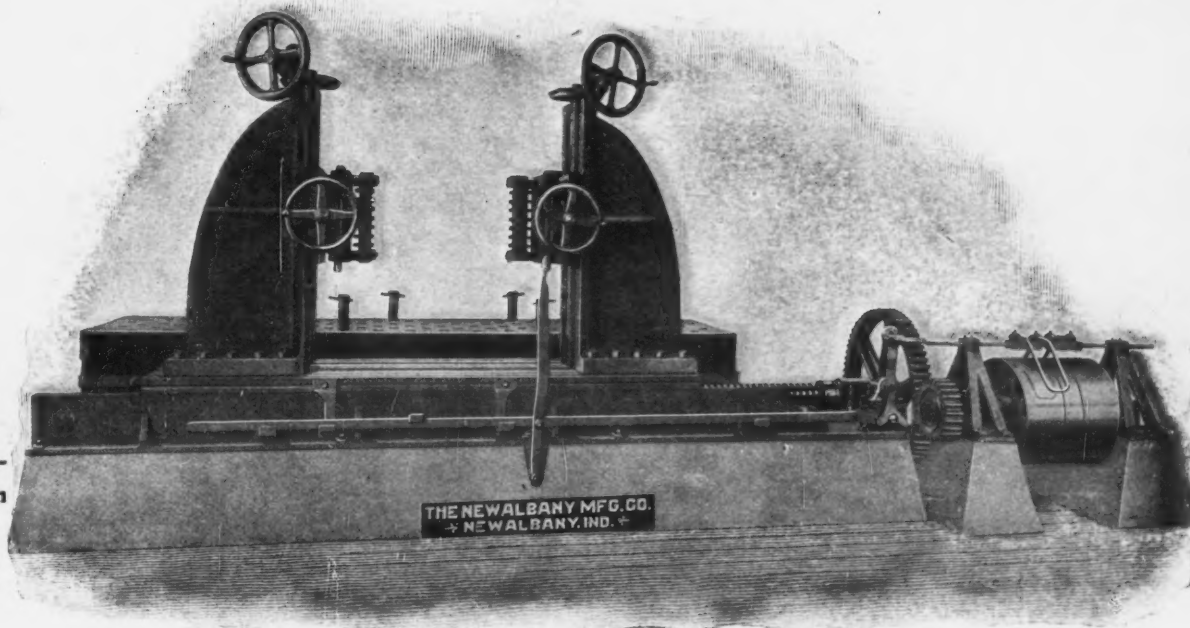
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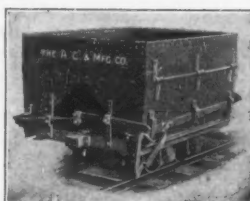


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